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Sent: Wednesday, May 22, 2013 5:06 PM
To: Rep. Kevin Cotter; Rep. Klint Kesto (District 39); Rep. Kurt Heise; Rep. Joel Johnson; Rep. Brad Jacobsen; Rep. Andrea LaFontaine; Rep. Tom Leonard (District 93); Rep. Phil Cavanagh (District 10); Rep. Ellen Cogen Lipton (District 27); Rep. Jeff Irwin; District 14
Cc: Angie Lake
Subject: Medical Marihuana Hearing May 23, 2013
Attachments: dispensaries.pdf; RAND_Study.pdf

Dear Members of the House Judiciary Committee:

Thank you for the opportunity to discuss medical cannabis. In preparation for tomorrow's hearing, I have attached two reports on medical cannabis dispensaries that I hope you will find pertinent to the testimony you will hear.

http://www.safeaccessnow.org/article.php?id=6809

RAND Study Finds No Link Between Medical Marijuana Dispensaries and Crime

Report affirms claims of patient advocates and officials from cities that regulate distribution

Oakland, CA -- The RAND Corporation issued a report today dispelling the myth that there are inherent links between medial marijuana distribution centers and crime. The study on which the RAND report is based claims that crime was as much as 60 percent greater around medical marijuana dispensaries that had been shut down by the City of Los Angeles compared to those areas with open dispensaries. "[W]e found no evidence that medical marijuana dispensaries in general cause crime to rise," said Mireille Jacobson, the study's lead author and a senior economist at RAND.

RAND's study, which challenges the common wisdom that medical marijuana dispensaries promote criminal activity, affirms the findings of patient advocates. "We have reached the same conclusions as RAND using a qualitative study of public officials with firsthand experience of how dispensaries reduce crime in their neighborhoods,"
said Steph Sherer, Executive Director of Americans for Safe Access (ASA), the country's leading medical marijuana advocacy group.
"Unfortunately, law enforcement has largely ignored or refuted these findings."

According to a statement from RAND, the study "examined crime reports for the 10 days prior to and the 10 days following June 7, 2010, when the city of Los Angeles ordered more than 70 percent of the city's 638 medical marijuana dispensaries to close." Researchers analyzed crime reports within a few blocks around dispensaries that closed and compared that to crime reports for neighborhoods where dispensaries remained open. In total, RAND said that "researchers examined 21 days of crime reports for 600 dispensaries in Los Angeles County -- 170 dispensaries remained open while 430 were ordered to close."

RAND calls its study "the first systematic analysis of the link between medical marijuana dispensaries and crime," however Los Angeles Police Chief Charlie Beck conducted his own study in 2010 comparing the levels of crime at the city's banks with its medical marijuana dispensaries. Chief Beck found that 71 robberies had occurred at the more than 350 banks in the city, compared to 47 robberies at the more than 500 medical marijuana facilities. At the time, Beck observed that, "banks are more likely to get robbed than medical marijuana dispensaries," and the claim that dispensaries attract crime "doesn't really bear out."

There are at least 60 localities in California and many more around the country that regulate the distribution of medical marijuana.
"Dispensary regulations bring greater oversight and less crime to local communities," continued Sherer. "We're hopeful that an objective study like RAND's will help dispel the fear that our opposition is spreading across California and compel more local governments to adopt sensible regulations."

- See more at: http://www.safeaccessnow.org/article.php?id=6809#sthash.GLejgXeB.dpuf

Thank you for your consideration. Please do not hesitate to contact me if you have any questions or need any more information.

Sincerely,
--
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Hindawi Publishing Corporation
Journal of Toxicology
Volume 2013, Article ID 378168, 6 pages
http://dx.doi.org/10.1155/2013/378168

Hindawi

Research Article

Determination of Pesticide Residues in Cannabis Smoke

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Received 11 February 2013; Accepted 22 April 2013

Academic Editor: Steven J. Bursian

The present study was conducted in order to quantify to what extent cannabis consumers may be exposed to pesticide and other chemical residues through inhaled mainstream cannabis smoke. Three different smoking devices were evaluated in order to provide a generalized data set representative of pesticide exposures possible for medical cannabis users. Three different pesticides, bifenthrin, diazinon, and permethrin, along with the plant growth regulator paclobutrazol, which are readily available to cultivators in commercial products, were investigated in the experiment. Smoke generated from the smoking devices was condensed in tandem chilled gas traps and analyzed with gas chromatography-mass spectrometry (GC-MS). Recoveries of residues were as high as 69.5% depending on the device used and the component investigated, suggesting that the potential of pesticide and chemical residue exposures to cannabis users is substantial and may pose a significant toxicological threat in the absence of adequate regulatory frameworks.

1. Introduction

Cannabis *sativa* L. has been widely utilized by humans for thousands of years for the relief of a wide range of physiological ailments. In the United States, there are currently 18 different states and the District of Columbia that legally allow for the medical use of cannabis, and most recently the states of Colorado and Washington have legalized the use of cannabis by adults for recreational purposes. State lawmakers and regulatory departments are now being tasked to best enact appropriate laws, rules, and regulations on the use of cannabis for both medicinal and recreational purposes. While medicinal use of cannabis in a smoked form may be widely debated as an effective delivery form, rapidity of effect and ease of titration of dose lend it to be extensively used by many patients as their preferred delivery method today. Undoubtedly, recreational use will see considerable consumption via smoking of dried cannabis flowers. In an effort to help aid patients, lawmakers, regulators, and the general public understand the potential harms of contaminated cannabis we sought to determine to what extent pesticide residues may transfer into the mainstream smoke, produced from cannabis, when inhaled through various smoking devices currently being used by medical cannabis patients. Mainstream smoke consists of the smoke inhaled from a smoking device directly while sidestream smoke refers to smoke that otherwise escapes the device and is not directly inhaled.

The ubiquitous use of pesticides in agriculture has earned itself a long history in the United States from the outset of the Insecticide Act passed in 1910 to the now heavily engaged US Environmental Protection Agency (US EPA), Federal Department of Agriculture (FDA), and United States Department of Agriculture (USDA) along with individual state regulators [1]. According to a report issued by the US General Accounting Office (GAO) in 2003, the use of pesticides on tobacco crops was limited to 37 pesticides, which included various organochlorides, organophosphates, and other classes of pesticides. Allowable pesticides and residue levels on food crops are determined by the US EPA, while the testing and monitoring of the presence and levels of residues are conducted by the FDA and USDA. However, since tobacco is not a food crop, the US EPA has not set tolerances on the residue levels on tobacco crops. Consequently, tobacco is only monitored for compliance with US EPA approved pesticides while the residue levels are not federally regulated [2].

To date, there are no approved pesticides or application limits established for use on cannabis crops by the US EPA; therefore, all pesticide use on this crop is currently illegal [3]. The use of pesticides and plant growth regulators in medicinal cannabis cultivation has been found to be quite prevalent by both testing laboratories and authority laboratories alike. Many commercially available pesticide containing products or nutrient systems, some only approved for use on ornamental crops, are widely available from a variety of sources including hardware stores, specialty indoor hydroponic shops, and various, sometimes unscrupulous, online vendors. While 18 states allow cannabis for medicinal use, the majority of the current medical cannabis supply lacks regulations and enforcement related to the quality and safety of the plant material for consumption. Laboratories operating within California have reported that cannabis samples contaminated with residual pesticides are frequently encountered. In 2009 the Los Angeles City Attorney's office covertly acquired and then tested three medical cannabis samples available to patients through dispensaries and found that in two of the samples exceedingly high levels of bifenthrin were found. In one sample, 1600 times the legal digestible amount was measured, and in the other, 85 times the legal limit was measured, although the exact quantities were not stated [4].

Many medical cannabis products are currently cultivated, processed, and prepared by private entities that are not regulated by external agencies. The lack of quality control results in patients potentially being exposed to cannabis contaminated with toxic levels of pesticides. Although not yet directly quantified, additional health complications in patients may become a contingency of pesticide exposure and may also interfere with long-term cannabis use studies. Regardless, pesticide toxicity is well documented [5] and more importantly can pose substantial threats to immunocompromised patients or patients with other conditions, such as diseases of the liver, that may intensify the toxicological effects of pesticide exposure [6]. Additionally, during heating pyrolysis products from the plant material form a highly complex mixture of products, many of which may interact with the pesticides or pyrolysis products of the pesticides forming more toxic materials, or highly toxic pyrolysis products may form from the pesticide residues alone [7]. As stated in the review by US General Accounting Office (GAO) in 2003, exposure to organophosphate pesticides through inhalation causes the most rapid appearance of toxic symptoms, and the primary cause of death from organophosphate pesticides is respiratory failure [2]. Considering these issues, evaluation of the exposure from contaminated cannabis needs to be urgently addressed so that new regulations can be properly guided.

A previous pesticide study conducted with filtered tobacco cigarettes had positively identified the recovery of pesticides in the mainstream smoke to range from 2 to 16% [8]. Additionally, the distributions of volatilized pesticides and pyrolysis products in tobacco cigarette mainstream smoke and sidestream smoke were found to differ [7]. The mainstream smoke pesticide residues consist primarily of unpyrolized pesticides carried over by distillation characteristics related to steam volatility, while in the sidestream smoke, a larger portion of pyrolysis products are found [7]. In the same study, it was determined that about one half of ^{14}C-labeled pesticides were retained in a cotton cigarette filter in a nonselective manner [7]. For the most part, since cigarette filters absorb a significant portion of the volatilized residues and a substantial toxicological threat is already associated with smoking tobacco, little concern for pesticide exposure to tobacco smokers has been considered [2, 7]. Cannabis smoking devices often do not include filtration processes and because of this the potential quantities of pesticide residues that may be consumed increases dramatically when compared with tobacco smoking. In the present study, we chose to evaluate both filtered and nonfiltered smoking devices to better understand this effect with cannabis and commonly employed medical cannabis consumption methods. While it is known that combustion of plant material causes the formation of carcinogens, there has been no direct correlation in the formation of lung cancers to the inhalation of combusted cannabis [8]. The presence of pesticide residues is therefore critical to be monitored, and furthermore, those individuals seeking to use cannabis for medicinal purposes may also be more physiologically susceptible to negative impacts caused by the presence of these residues.

To prevent overtreatment of tobacco with pesticides, certain application limits on crop treatment have been imposed to minimize exposure to tobacco smokers, but these are not fully federally regulated [2, 9, 10]. Industrial and other laboratories have attempted to quantify the levels at which pesticide residues transfer into the smoke stream in order to validate what quantities of pesticides may safely be applied to crops, and these values have been used to help moderate the levels of pesticide exposure of the public [5, 11]. Considering that there currently exists a significant lack of analogous regulations set in place for the medical cannabis supply, it is important that the potential for pesticide exposure is evaluated under conditions commonly employed by the medicinal user. In order to determine the existence of pesticide and chemical residues in the cannabis smoke stream, a number of pesticides and a plant growth regulator which are readily available to cannabis cultivators and have been measured in high frequency in various medical cannabis products (unpublished data, The Werc Shop, Inc., 4) were selected for the study. Three different smoking devices, chosen to provide a broad overview, were used in the study; a small glass pipe, a water pipe, and an identical water pipe outfitted with activated carbon filters and cotton filters.

2. Methods

2.1. Chemicals. Acetonitrile, methanol, and water of analytical grade as well as washing acetone and methanol of laboratory grade were purchased from Sigma Aldrich, St. Louis, MO, USA. Bifenthrin and diazinon were purchased from Chem Service, West Chester, PA, USA. Paclobutrazol and permethrin were purchased from Sigma Aldrich, St. Louis, MO, USA. Virgin coconut carbon and cotton were obtained from Scientific Inhalations, Grass Valley, CA, USA.

2.2. Smoking Devices. The water pipe was manufactured by Scientific Inhalations, Inc. and is named the McFinn Triple Filtered Water Pipe having a vapor flow path consisting of first a 2.5 cm cup for placement of the flower material, followed by a 2.5 cm connector, flowing in to a 10 cm filter, down further into a 15 cm water chamber having a 3.1 cm inner diameter and a water fill line 3.8 cm from the base. The water chamber also has a second 12.5 cm filter chamber connected at a 45° angle through a 5 cm fitting that is located 12.5 cm above the base of the water chamber, and the second arm then further connects to a mouth-piece. A special mouth-piece was custom made by Scientific Inhalations to allow for easy connection to the gas-wash bottle apparatus. The glass pipe was custom made by Scientific Inhalations to be 10.5 cm long with a 3.1 cm chamber diameter and 1.1 cm inner diameter that included a special mouth-piece configuration for easy adaption to the gas-wash bottle apparatus.

2.3. Method for Identification and Quantification of Pesticide Residues by GC-MS. Analysis was conducted with a GCMS-QP2010 PLUS (Shimadzu, Japan) gas chromatograph-mass spectrometer. Separations were performed using a Shimadzu SHRXI-5MS 30 meter, 0.25 mm i.d., and 0.25 um film thickness column. Gas chromatography parameters were as follows: injector temperature 250.0°C, splitless injection mode, column oven temp. 50.0°C held for one minute, followed by an increase to 125°C by 25°C/min, and finally increased to 300°C for 15 minutes by 10°C/min. The column flow was set to 1.69 mL/min 99.999% Helium. MS scan was carried out in selected ion monitoring (SIM) mode with two reference ions for each pesticide to avoid false positives from the complex matrixes. Pesticide calibration curves were prepared in matched matrixes, which were prepared from unspiked plant material using the same smoking procedure used for all the experiments as described in Section 2.6.

2.4. Preparation of Pesticide Spiked Plant Material. Plant material was prepared by first placing approximately 8 grams of homogenized cannabis flower material into a 250 mL round bottom flask and vortexed at 1200 rpm until the small non-leafy material fell to the bottom. This material was then separated and sifted over a rough screen to further remove small non-leafy material. This process was repeated five times until the plant material was sufficiently cleared of fine material that might otherwise incur poor homogeneity of pesticide distribution in the bulk of the material.

To the sifted plant material, a concentrated solution of pesticide mixture in methanol, prepared to contain 0.730 mg/mL bifenthrin, 7.41 mg/mL diazinon, 4.37 mg/mL paclobutrazol, and 6.18 mg/mL permethrin, was then added incrementally to the plant material. These concentrations were selected to allow for full quantification of residues captured in the gas wash bottle solutions. A total of 8.30 mL of the pesticide mixture solution was added to 7.4860 g of the material incrementally. Each increment was carried out by adding 1 mL of the solution drop-wise into a 250 mL round bottom flask containing the plant material that was then vortexed at 1300 rpm over a 2 minute period. After each mL was added, the flask was then placed on a rotary evaporator and rotated at 50 rpm for 3 minutes while under vacuum. This was repeated until all 8.30 mL were added and then evaporated. The flask was then covered in a dark encasing and stored at −20°C until further used. From the spiked plant material, duplicate samples were prepared and evaluated for homogeneity of the pesticide distribution. The measured values were averaged and this value was used for the recovery calculations in the smoke condensate.

2.5. Apparatus and Method for Condensation and Recovery of Pesticide Residues in Smoke Stream. The smoke stream was collected by being directed through two gas washing bottles which were placed in tandem cold methanol traps both held at −48°C. The gas wash bottles were filled with 100 mL of analytical grade methanol each. The gas wash bottles were then connected with a 6 inch tube in tandem to a vacuum pump intermediated by a gas flow regulator. The end of the system was then fixed to the smoking devices via a frosted glass fitting or direct connection via tygon tubing. A vacuum was applied to the system using a diaphragm vacuum pump (MD 4C, Vacuubrand, Essex, CT, USA) in order to pull smoke from the smoking device and through both of the gas wash bottles.

In order to ensure that the draw rate and vacuum pressure were constant throughout all experiments, a simple device was arranged to monitor the vacuum settings. A long glass column was placed upright in a water vessel filled with a constant volume of water. To the top end of the glass column, a tubing fitting was fixed and vacuum tubing connected. To the tubing, a valve at a constant setting was opened slightly to allow air to enter and prevent the water from being pulled into the vacuum. After having twelve different current medical cannabis patients inhale through the end of a tube attached to the valve while instructed to emulate the draw strength they typically use for these smoking devices, it was determined that the draw rate of an average smoking device user was approximately 1.2 L/min. This draw rate was then used for all of the experiments by ensuring that the vacuum was set to draw at a rate that yielded height in the water column corresponding to 1.2 L/min. This process was performed before, during, and after each experiment to ensure the simulated inhalation flow rate was as consistent as possible.

2.6. Smoking Procedure. The smoking procedure was carried out by passing the flame of a disposable lighter over the plant material for three seconds at 15-second intervals while the vacuum was applied at 1.2 L/min. For each experiment, approximately 0.45 g of spiked cannabis was used. Aliquots from the gas wash bottles were taken after being shaken and agitated to capture any condensate on the walls and stems of the wash bottles and measured with GC-MS. Samples were then stored at −20°C in the absence of light. All glassware, tubing, and smoking devices were then washed thoroughly with methanol and acetone between experiments. In the case of the water pipe, water was used in the water chamber as per manufacturer's specifications, and when applicable,

Table 1: Calibration curves and goodness of fit values.

Residue	Range (μg/mL)	Raw plant material matrix	Glass pipe smoke matrix	Water pipe smoke matrix
Diazinon	0.737–36.9	0.9994	0.9994	0.9997
Paclobutrazol	0.437–21.9	0.9994	0.9982	0.9999
Bifenthrin	0.072–3.62	0.9811	0.9998	0.9971
Permethrin	0.607–30.4	0.9915	0.9999	0.9999

Table 2: Spiked plant material extractions.

Pesticide	μg/gram plant
Spiked plant material	
Diazinon	6950 ± 5.88
Paclobutrazol	4120 ± 4.46
Bifenthrin	855 ± 3.63
Permethrin	6270 ± 4.69

Data presented as mean μg pesticide/gram plant material ± relative standard deviation. Sample size of 3 for all measurements.

7.5 g of virgin coconut carbon was used in the carbon filter cartridge, while 0.7 g of cotton was used in the cotton filter cartridge. After each experiment using the filtered device, the cotton and carbon were extracted with 15 mL of analytical grade methanol and measured by GC-MS. Experiments were carried out in triplicate for each device.

2.7. Preparation of Calibration Curves. Three sets of calibration curves were prepared, each in different matrixes that consisted of smoked plant material solutions in order to account for possible ion suppression from the matrixes. All matrixes and plant material samples were ensured to be free of the pesticides of interest before use and further analysis. For the preparation of the raw plant material matrix, approximately 4 g of unspiked cannabis plant material from the same source as that which was spiked was extracted with 100 mL of analytical grade methanol and stirred with a stir bar for 20 minutes, followed by filtration through a Buchner funnel. Smoke condensate matrixes from the glass pipe and the water pipe were prepared by running the experiment with each device as described in Section 2.6 and storing the solutions in a dark container at −20°C before analysis. Each of these matrix solutions was then used to dilute the stock solutions of pesticides for generating calibration curves in each matrix.

3. Results

The calibration solutions of chemical residues were prepared in the three separate matrixes and the calibration curves generated are tabulated in Table 1. Table 2 presents the chemical residue content of the spiked plant material. Chemical residues recovered from the smoking devices are tabulated in Table 3, as well as the percent recovery with respect to the spiked plant material. It should be noted that 97% of the recovered residue in the gas wash bottles was found in the first wash bottle, representing excellent recovery capabilities. In all three experiments, the recovery of chemical residues from the activated charcoal was below the lowest calibration level and is therefore not reported. Figure 1 illustrates the comparative recovery of chemical residues from each of the smoking devices.

Table 3: Recovery of pesticides in smoke condensate.

Sample/residue	μg/gram plant	% Recovery
Water pipe with filters		
Diazinon	589 ± 31.0	0.08
Paclobutrazol	420 ± 32.5	10.2
Bifenthrin	77 ± 34.5	9.00
Permethrin	685 ± 34.9	10.9
Cotton filter		
Diazinon	190 ± 11.0	24.9
Paclobutrazol	109 ± 8.80	30.1
Bifenthrin	20.8 ± 9.16	26.6
Permethrin	134 ± 8.52	25.1
Carbon filter	N/A	N/A
Water pipe w/out filters		
Diazinon	2930 ± 15.1	42.2
Paclobutrazol	2040 ± 11.3	49.5
Bifenthrin	389 ± 10.1	45.4
Permethrin	3760 ± 9.72	59.9
Glass pipe		
Diazinon	4270 ± 12.3	61.5
Paclobutrazol	2789 ± 13.8	67.4
Bifenthrin	516 ± 12.8	60.3
Permethrin	4360 ± 9.70	69.5

Data presented as mean μg pesticide/gram plant material ± relative standard deviation. Sample size of 3 for all measurements.

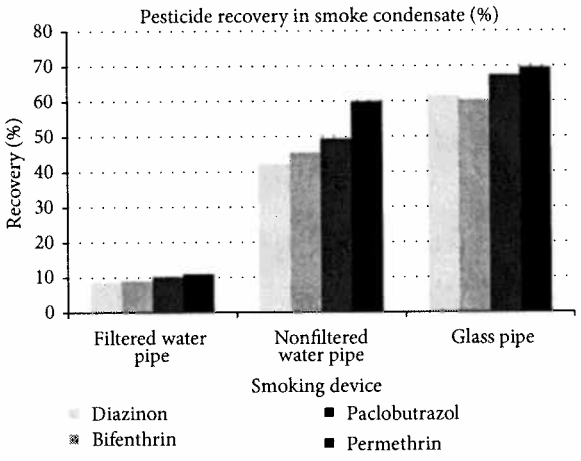

Figure 1: Percent recovery of pesticides from the smoke stream from each device.

4. Discussion

The relative amounts of pesticide residues present in other smoked plant material, most notably tobacco, have been studied to determine the amount present in raw plant material, as well as the levels of transfer into the smoke stream. These results have been used to help guide regulations on pesticide application on tobacco crops and reduce the potentials of pesticide toxicity in consumers [9, 12, 13]. As medical cannabis patients already possess negative health complications, exposure to pesticides may create additional health complications and interfere with other health care approaches. In addition, the awareness of proper and safe pesticide use and application is very important to any crop that will be consumed, especially one that will be inhaled. Understanding to what extent chemical residues may be consumed by the user of the final product is important, but also improper applications of pesticides on cannabis crops may lead to other contingencies such as applicator exposure and environmental contamination. To bring attention to the importance of pesticide awareness and to further the regulatory efforts for both the medical cannabis and impending recreational cannabis supplies, the present study demonstrates quantitatively the potential for pesticides to be transferred into the smoke stream under the conditions often encountered by cannabis users. While the variance between triplicate samples was notable, when considering the vast number of variables including heating conditions, and other inherent variations, the overall variation was fairly minimal.

From the data presented here, the recoveries of pesticide residues in the smoke stream are very significant in relation to the potential of exposure by the end consumer. A previous study with filtered tobacco cigarettes published by Cai et al. [9] noted that the range of pesticide recovery from the smoke stream was 2 to 16%. The range of pesticide residue recovery in that study was comparable to the water pipe with filters (0.08–10.9%) used in the present study, but without filters the recovery from the present study was much higher as evident in Table 3 and Figure 1. This suggests that the cotton filters in a cigarette or water pipe are critical in capturing and reducing pesticide residues in the mainstream smoke. Also, extractions of the cotton filters (Table 3) contained a significant portion of the pesticides passed through the device. The carbon filter retained an insignificant amount of pesticides, but this may have been due to heating and desorption of retained compounds during each use as this portion is closest to the plant material combustion point. Between the glass pipe and the water pipe with no filters, the relative pesticide recovery was greater when the glass pipe was used. This difference may be attributed to the comparable levels of surface area for the residues to accumulate inside the device by condensation, as well as factors such as total path length, smoke stream total flow rate velocity, and the absolute temperatures achieved in situ. Additionally, the water pipe contained room temperature water that aids in cooling the smoke stream before exiting the device. Comparative recoveries between individual pesticides (Figure 1) show significant differences in the recovery of each pesticide. These differences may be attributed to the variations in stability of each compound, volatilization characteristics, and to what extent degradation occurs during heating and combustion of the plant material surface.

It should be noted that different levels of pesticides present on different varietals of cannabis flowers present different matrixes that may impact the amount of pesticides potentially being inhaled. Different user behaviors including depth of breath, length of inhalation hold time, and choice of heating method may also impact overall individual exposure amounts. In our lab we use validated methods to detect pesticides above EPA-based acceptable daily intake levels for a 40 Kg individual consuming 10 g of flower material per day. While these limits represent residues on plant material at levels lower than the levels utilized in this study, a number of samples seen have failed considerably further supporting previous findings by local authorities [4]. Additional efforts are ongoing to quantify the amount of pesticides being detected in contaminated medical cannabis products.

5. Conclusion

The present study clearly demonstrates that chemical residues present on cannabis will directly transfer into the mainstream smoke and ultimately the end user. Recoveries occurred in the highest quantity with the hand-held glass pipe, ranging between 60.3% and 69.5%. Recovery from the unfiltered water pipe ranged between 42.2% and 59.9%, and recovery from the filtered water pipe ranged between 0.08% and 10.9%. As mentioned previously, the effects of filtration have a significant impact on the total residues consumed. While there are differences between the devices, in general the portion of pesticide recovery is alarmingly high and is a serious concern. Although pesticides are designed to degrade fairly quickly in the environment [14], it is evident from this study that some are highly resistant to pyrolysis and volatilize easily into the smoke stream in agreement with previous studies noting the distillation behavior of pesticides in mainstream smoke [7]. Considering these results, high pesticide exposure through cannabis smoking is a significant possibility, which may lead to further health complications in cannabis consumers. This revelation certainly confounds previous metastudies seeking to determine the possible negative consequences associated with long-term cannabis use, as our experience with a breadth of samples indicates a significant possibility that the negative consequences reported in these studies could have been the result from various chemical residue exposures resulting from the use of unregulated product supply chains. As more states legislate and regulate cannabis products, a strong regulatory approach will help to reduce the potential public health and safety consequences from pesticide exposure. While it is fortunate that chemical residue recovery may be minimized with smoke filtering, this only serves to improve consumer safety today with no adequate regulations, as there is no better way to avoid pesticide and other chemical residue consumption than to assure it is not present on the product in the first place. Active sampling and analytical monitoring of the cannabis supply, along with collaborative efforts between current patients and state regulatory authorities, are needed

to help further guide the development and implementation of proper application methods and testing standards that will avoid environmental contamination and consumer threats to public health and safety.

Conflict of Interests

The authors declare that they have no conflict of interests.

Acknowledgments

The authors would like to gratefully thank the team members of Scientific Inhalations for all of their collaborative effort and support. They would also like to thank the Pasadena Area Community College District for their grant support of Nicholas Sullivan's internship.

References

[1] Congress of the United Statesm, Office of Technology Assessment, *Pesticide Residues in Food*, Library of Congress, Washington, DC, USA, 1988.

[2] J. B. Stephenson, "U.S. GAO. Pesticides on Tobacco: federal activities to assess risk and monitor residues," GAO-03-485, United States Government Printing Office, Washington, DC, USA, 2003.

[3] J. Thomson, "Medical Marijuana Cultivation and Policy Gaps," California Research Bureau, 2012.

[4] N. Skeet, "City Attorney Explains Medical Marijuana Issue on NBC," http://lacityorgatty.blogspot.com/2009/10/city-attorney-explains-medical.html, 2009.

[5] L. J. Tadeo, *Analysis of Pesticides in Food and Environmental Samples*, CRC Press, New York, NY, USA, 2008.

[6] J. M. McPartland and P. L. Pruitt, "Medical marijuana and its use by the immunocompromised," *Alternative Therapies in Health and Medicine*, vol. 3, no. 3, pp. 39–45, 1997.

[7] W. Lorenz, M. Bahadir, and F. Korte, "Thermolysis of pesticide residues during tobacco smoking," *Chemosphere*, vol. 16, no. 2-3, pp. 521–522, 1987.

[8] M. Hashibe, H. Morgenstern, Y. Cui et al., "Marijuana use and the risk of lung and upper aerodigestive tract cancers: results of a population-based case-control study," *Cancer Epidemiology Biomarkers and Prevention*, vol. 15, no. 10, pp. 1829–1834, 2006.

[9] J. Cai, B. Liu, X. Zhu, and Q. Su, "Determination of pyrethroid residues in tobacco and cigarette smoke by capillary gas chromatography," *Journal of Chromatography A*, vol. 964, no. 1-2, pp. 205–211, 2002.

[10] P. J. O'Connor-Marer, *The Safe and Effective Use of Pesticides*, University of California, Berkeley, Calif, USA, 2nd edition, 1999.

[11] P. J. Landrigan, K. E. Powell, L. M. James, and P. R. Taylor, "Paraquat and marijuana: epidemiologic risk assessment," *American Journal of Public Health*, vol. 73, no. 7, pp. 784–788, 1983.

[12] R. E. Fresenius, "Analysis of tobacco smoke condensate," *Journal of Analytical and Applied Pyrolysis*, vol. 8, no. C, pp. 561–575, 1985.

[13] C. J. Smith and C. Hansch, "The relative toxicity of compounds in mainstream cigarette smoke condensate," *Food and Chemical Toxicology*, vol. 38, no. 7, pp. 637–646, 2000.

[14] S. W. Purkis, C. Muellerb, and M. Intorp, "The fate of ingredients in and impact on cigarette smoke," *Food and Chemical Toxicology*, vol. 49, no. 12, pp. 3238–3248, 2011.

Americans For Safe Access

AN ORGANIZATION OF MEDICAL PROFESSIONALS, SCIENTISTS, AND PATIENTS HELPING PATIENTS

MEDICAL CANNABIS DISPENSING COLLECTIVES AND LOCAL REGULATION

AmericansFor SafeAccess

Advancing Legal Medical Marijuana Therapeutics and Research

MEDICAL CANNABIS DISPENSING COLLECTIVES AND LOCAL REGULATION

February 2011

Americans For Safe Access

AN ORGANIZATION OF MEDICAL PROFESSIONALS, SCIENTISTS AND PATIENTS HELPING PATIENTS

EXECUTIVE SUMMARY

California's original medical cannabis law, the Compassionate Use Act of 1996 (Prop. 215), encouraged state and federal governments to develop programs for safe and affordable distribution of medical cannabis (marijuana). Although self-regulated medical cannabis dispensing collectives (dispensaries) have existed for more than 14 years in California, the passage of state legislation (SB 420) in 2003, court rulings in *People v. Urziceanu* (2005) and *County of Butte v. Superior Court* (2009), and guidelines from the state Attorney General, all recognized and affirmed their status as legal entities under state law. With most of the 300,000 cannabis patients in California relying on dispensaries for their medicine, local officials across the state are developing regulatory ordinances that address business licensing, zoning, and other safety and operational requirements that meet the needs of patients and the community.

Americans for Safe Access, the leading national organization representing the interests of medical cannabis patients and their doctors, has undertaken a study of the experience of those communities that have dispensary ordinances to act as a guide to policy makers tackling dispensary regulations in their communities. The report that follows details those experiences, as related by local officials; it also covers some of the political background and current legal status of dispensaries, outlines important issues to consider in drafting dispensary regulations, and summarizes a recent study by a University of California, Berkeley researcher on the community benefits of dispensaries. In short, this report describes:

Benefits of regulated dispensaries to communities include:

- providing access for the most seriously ill and injured,
- offering a safer environment for patients than having to buy on the illicit market,
- improving the health of patients through social support,
- helping patients with other social services, such as food and housing,
- having a greater than average customer satisfaction rating for health care.

Creating dispensary regulations combats crime because:

- dispensary security reduces crime in the vicinity,
- street sales tend to decrease,
- patients and operators are vigilant any criminal activity is reported to police.

Regulated dispensaries are:

- legal under California state law,
- helping revitalize neighborhoods,
- bringing new customers to neighboring businesses,
- not a source of community complaints.

This report concludes with a section outlining the important elements for local officials to consider as they move forward with regulations for dispensaries. ASA has worked successfully with officials across the state to craft ordinances that meet the state's legal requirements, as well as the needs of patients and the larger community.

Please contact us if you have questions: 888-929-4367.

OVERVIEW OF MEDICAL CANNABIS DISPENSARIES

"As the number of patients in the state of California who rely upon medical cannabis for their treatment continues to grow, it is increasingly imperative that cities and counties address the issue of dispensaries in our respective communities. In the city of Oakland we recognized this need and adopted an ordinance which balances patients' need for safe access to treatment while reassuring the community that these dispensaries are run right. A tangential benefit of the dispensaries has been that they have helped to stimulate economic development in the areas where they are located."

—Desley Brooks, Oakland City Councilmember

ABOUT THIS REPORT

Land-use decisions are now part of the implementation of California's medical marijuana, or cannabis, laws. As a result, medical cannabis dispensing collectives (dispensaries) are the subject of considerable debate by planning and other local officials. Dispensaries have been operating openly in many communities since the passage of Proposition 215 in 1996. As a compassionate, community-based response to the problems patients face in trying to access cannabis, dispensaries are currently used by more than half of all patients in the state and are essential to those most seriously ill or injured. Since 2003, when the legislature further implemented state law by expressly addressing the issue of patient collectives and compensation for cannabis, more dispensaries have opened and more communities have been faced with questions about business permits and land use options.

In an attempt to clarify the issues involved, Americans for Safe Access has conducted a survey of local officials in addition to continuously tracking regulatory activity throughout the state (see AmericansForSafeAccess.org/regulations). The report that follows outlines some of the underlying questions and provides an overview of the experiences of cities and counties around the state. In many parts of California, dispensaries have operated responsibly and provided essential services to the most needy without local intervention, but city and county officials are also considering how to arrive at the most effective regulations for their community, ones that respect the rights of patients for safe and legal access within the context of the larger community.

ABOUT AMERICANS FOR SAFE ACCESS

Americans for Safe Access (ASA) is the largest national member-based organization of patients, medical professionals, scientists and concerned citizens promoting safe and legal access to cannabis for therapeutic uses and research. ASA works in partnership with state, local and national legislators to overcome barriers and create policies that improve access to cannabis for patients and researchers. We have more than 50,000 active members with chapters and affiliates in all 50 states.

THE NATIONAL POLITICAL LANDSCAPE

A substantial majority of Americans support safe and legal access to medical cannabis. Public opinion polls in every part of the country show majority support cutting across political and demographic lines. Among them, a Time/CNN poll in 2002 showed 80% national support; a survey of AARP members in 2004 showed 72% of older Americans support legal access, with those in the western states polling 82% in favor. The two largest physician-based professional organizations in the U.S., the American Medical Association and the

American College of Physicians, have urged the federal government to reconsider its regulatory classification of cannabis.

For decades, the federal government has maintained the position that cannabis has no medical value, despite the overwhelming evidence of marijuana's medical efficacy and the broad public support for its use. Not to be deterred, Americans have turned to state-based solutions. The laws passed by voters and legislators are intended to mitigate the effects of the federal government's prohibition on medical cannabis by allowing qualified patients to use it without state or local interference.

Fifteen states have adopted medical marijuana laws in the U.S. Beginning with California in 1996, voters passed initiatives in nine states plus the District of Columbia—Alaska, Arizona, Colorado, Maine, Michigan, Montana, Nevada, Oregon, and Washington. State legislatures followed suit, with elected officials in Hawaii, Maryland, New Jersey, New Mexico, Rhode Island, and Vermont taking action to protect patients from criminal penalty. Understanding the need to address safe and affordable access to medical cannabis, Arizona, California, Colorado, Maine, New Jersey, New Mexico, and Rhode Island all adopted local or state laws that regulate its production and distribution.

Despite *Gonzales v. Raich*, a U.S. Supreme Court ruling in 2005 that gave government the discretion to enforce federal cannabis laws even in medical cannabis states, more states continue to adopt laws each year.

With the election of President Barack Obama, a new approach to medical cannabis is taking shape. In October 2009, the Justice Department issued guidelines discouraging U.S. Attorneys from investigating and prosecuting medical cannabis cases. While this new policy specifically addresses enforcement, ASA continues to work with Congress and the President to push for expanded research and protection for all medical cannabis in the U.S. The public advocacy of well-known cannabis patients such as the Emmy-winning talkshow host Montel Williams and music artist Melissa Etheridge has also increased public awareness and helped to create political pressure for changes in state and federal policies.

HISTORY OF MEDICAL CANNABIS IN CALIFORNIA

Since 1996, when 56% of California voters approved the Compassionate Use Act (CUA), public support for safe and legal access to medical cannabis has steadily increased. A statewide Field poll in 2004 found that "three in four voters (74%) favors implementation of the law." In 2003, the state legislature recognized that the Compassionate Use Act (CUA) gave little direction to local officials, which greatly impeded the safe and legal access to medical cannabis envisioned by voters.

Legislators passed Senate Bill 420, the Medical Marijuana Program (MMP) Act, which provided a greater blueprint for the implementation of California's medical cannabis law. Since the passage of the MMP, ASA has been responsible for multiple landmark court cases, including *City of Garden Grove v. Superior Court*, *County of San Diego v. San Diego NORML*, and *County of Butte v. Superior Court*. Such cases affirm and expand the rights granted by the CUA and MMP, and at the same time help local officials better implement state law.

In August 2008, California's Attorney General issued a directive to law enforcement on state medical marijuana law. In addition to reviewing the rights and responsibilities of patients and their caregivers, the guidelines affirmed the legality of storefront dispensaries and outlined a set of requirements for state law compliance. The attorney general guidelines also represent a roadmap by which local officials can develop regulatory ordinances for dispensaries.

WHAT IS A MEDICAL CANNABIS DISPENSING COLLECTIVE?

The majority of medical marijuana (cannabis) patients cannot cultivate their medicine for

themselves and cannot find a caregiver to grow it for them. Most of California's estimated 300,000 patients obtain their medicine from a Medical Cannabis Dispensing Collective (MCDC), often referred to as a "dispensary." Dispensaries are typically storefront facilities that provide medical cannabis and other services to patients in need. As of early 2011, ASA estimatees there are approximately 2,000 medical cannabis dispensaries in California.

Dispensaries operate with a closed membership that allows only qualified patients and primary caregivers to obtain cannabis, and only after membership is approved (upon verification of patient documentation). Many dispensaries offer on-site consumption, providing a safe and comfortable place where patients can medicate. An increasing number of dispensaries offer additional services for their patient membership, including such services as: massage, acupuncture, legal trainings, free meals, or counseling. Research on the social benefits for patients is discussed in the last section of this report.

RATIONALE FOR MEDICAL CANNABIS DISPENSING COLLECTIVES

While the Compassionate Use Act does not explicitly discuss medical cannabis dispensaries, it calls for the federal and state governments to "implement a plan to provide for the safe and affordable distribution of marijuana to all patients in medical need of marijuana." (Health & Safety Code § 11362.5) This portion of the law has been the basis for the development of compassionate, community-based systems of access for patients in various parts of California. In some cases, that has meant the creation of patient-run growing collectives that allow those with cultivation expertise to help other patients obtain medicine. In most cases, particularly in urban settings, that has meant the establishment of medical cannabis dispensing collectives, or dispensaries. These dispensaries are typically organized and run by groups of patients and their caregivers in a collective model of patient-directed health care that is becoming a prototype for the delivery of other health services.

MEDICAL CANNABIS DISPENSARIES ARE LEGAL UNDER STATE LAW

In an effort to clarify the voter initiative of 1996 and aid in its implementation across the state, the California legislature passed the Medical Marijuana Program Act (MMP), or Senate Bill 420, in 2003, establishing that qualified patients and primary caregivers may collectively or cooperatively cultivate and distribute cannabis for medical purposes (Cal. Health & Safety Code section 11362.775). The Act also exempts collectives and cooperatives from criminal sanctions associated with "sales" and maintaining a place where sales occur.

In 2005, California's Third District Court of Appeal affirmed the legality of collectives and cooperatives in the landmark case of People v. Urziceanu, which held that the MMP provides collectives and cooperatives a defense to marijuana distribution charges. Another landmark decision from the Third District Court of Appeal in the case of *County of Butte v. Superior Court* (2009) not only affirmed the legality of collectives but also found that collective members could contribute financially without having to directly participate in the cultivation.

In August 2008, the State Attorney General issued guidelines declaring that "a properly organized and operated collective or cooperative that dispenses medical marijuana through a storefront may be lawful under California law." The Attorney General provided law enforcement with a list of operational practices for collectives to help ensure compliance with state law. By adhering to a set of rules—including not-for-profit operation, the collection of sales tax, and the verification of patient status for collective members—dispensaries can operate lawfully and maintain legitimacy. In addition, local officials can use the Attorney General guidelines to help them adopt local regulatory ordinances.

In September 2010, the California Legislature

enacted Assembly Bill 2650, which states that medical marijuana dispensaries must be located further than 600-foot from a school. By recognizing "a medical marijuana cooperative, collective, dispensary, operator, establishment, or provider that is authorized by law to possess, cultivate, or distribute medical marijuana and that has a storefront or mobile retail outlet which ordinarily requires a local business license," the Legislature has expressed its intent that storefront dispensaries and delivery services are legal under California law.

WHY PATIENTS NEED CONVENIENT DISPENSARIES

While some patients with long-term illnesses or injuries have the time, space, and skill to cultivate their own cannabis, the majority of patients, particularly those in urban settings, do not have the ability to produce it themselves. For those patients, dispensaries are the only option for safe and legal access. This is all the more true for those individuals who are suffering from a sudden, acute injury or illness.

Many of the most serious and debilitating injuries and illnesses require immediate relief. A cancer patient, for instance, who has just begun chemotherapy will typically need immediate access for help with nausea, which is why a Harvard study found that 45% of oncologists were already recommending cannabis to their patients, even before it had been made legal in any state. It is unreasonable to exclude those patients most in need simply because they are incapable of gardening or cannot wait months for relief.

WHAT COMMUNITIES ARE DOING TO HELP PATIENTS

Many communities in California have recognized the essential service that dispensaries provide and have either tacitly allowed their operation or adopted ordinances regulating them. Dispensary regulation is one way in which the cities can exert local control and ensure that the needs of patients and the community at large are being met. As of January 2011, forty-two cities and nine counties have enacted regulations, and many more are considering doing so soon.

Officials recognize their duty to implement state laws, even in instances when they may not have previously supported medical cannabis legislation. Duke Martin, former mayor pro tem of Ridgecrest said during a city council hearing on their local dispensary ordinance, "it's something that's the law, and I will uphold the law."

This understanding of civic obligation was echoed at the Ridgecrest hearing by Councilmember Ron Carter, now Mayor Pro Tem, who said, "I want to make sure everything is legitimate and above board. It's legal. It's not something we can stop, but we can have an ordinance of regulations."

Similarly, Whittier Planning Commissioner R.D. McDonnell spoke publicly of the benefits of dispensary regulations at a city government hearing. "It provides us with reasonable protections," he said. "But at the same time provides the opportunity for the legitimate operations."

Whittier officials discussed the possibility of an outright ban on dispensary operations, but Greg Nordback said, "It was the opinion of our city attorney that you can't ban them; it's against the law. You have to come up with an area they can be in." Whittier passed its dispensary ordinance in December 2005.

Placerville Police Chief George Nielson commented that, "The issue of medical marijuana continues to be somewhat controversial in our community, as I suspect and hear it remains in other California communities. The issue of 'safe access' is important to some and not to others. There was some objection to the dispensary ordinance, but I would say it was a vocal minority on the issue."

IMPACT OF DISPENSARIES AND REGULATORY ORDINANCES ON COMMUNITIES IN CALIFORNIA

DISPENSARIES REDUCE CRIME AND IMPROVE PUBLIC SAFETY

Some reports have suggested that dispensaries are magnets for criminal activity and other undesirable behavior, which poses a problem for the community. But the experience of those cities with dispensary regulations says otherwise. Crime statistics and the accounts of local officials surveyed by ASA indicate that crime is actually reduced by the presence of a dispensary. And complaints from citizens and surrounding businesses are either negligible or are significantly reduced with the implementation of local regulations.

This trend has led multiple cities and counties to consider regulation as a solution. Kern County, which passed a dispensary ordinance in July 2006, is a case in point. The sheriff there noted in his staff report that "regulatory oversight at the local levels helps prevent crime directly and indirectly related to illegal operations occurring under the pretense and protection of state laws authorizing Medical Marijuana Dispensaries." Although dispensary-related crime has not been a problem for the county, the regulations will help law enforcement determine the legitimacy of dispensaries and their patients.

The sheriff specifically pointed out that, "existing dispensaries have not caused noticeable law enforcement problems or secondary effects for at least one year. As a result, the focus of the proposed Ordinance is narrowed to insure Dispensary compliance with the law" (Kern County Staff Report, Proposed Ordinance Regulating Medical Cannabis Dispensaries, July 11, 2006).

The presence of a dispensary in the neighborhood can actually improve public safety and reduce crime. Most dispensaries take security for their members and staff more seriously than many businesses. Security cameras are often used both inside and outside the premises, and security guards are often employed to ensure safety. Both cameras and security guards serve as a general deterrent to criminal activity and other problems on the street. Those likely to engage in such activities tend to move to a less-monitored area, thereby ensuring a safe environment not only for dispensary members and staff but also for neighbors and businesses in the surrounding area.

Residents in areas surrounding dispensaries have reported improvements to the neighborhood. Kirk C., a long time San Francisco resident, commented at a city hearing, "I have lived in the same apartment along the Divisadero corridor in San Francisco for the past five years. Each store that has opened in my neighborhood has been nicer, with many new restaurants quickly becoming some of the city's hottest spots. My neighborhood's crime and vandalism seems to be going down year after year. It strikes me that the dispensaries have been a vital part of the improvement that is going on in my neighborhood."

Oakland's city administrator who was responsible for the ordinance regulating dispensaries, Barbara Killey, noted that "The areas around the dispensaries may be some of the safest areas of Oakland now because of the level of security, surveillance, etc...since the ordinance passed."

Likewise, former Santa Rosa Mayor Jane Bender noted that since the city passed its ordinance, there appears to be "a decrease in criminal activity. There certainly has been a decrease in complaints. The city attorney says there have been no complaints either from citizens or from neighboring businesses."

Neighboring Sebastopol has had a similar experience. Despite public opposition to medical cannabis dispensaries, Sebastopol Police Chief Jeffrey Weaver admitted that for more than two years, "We've had no increased crime associated [with Sebastopol's medical cannabis dispensary], no fights, no loitering, no increase in graffiti, no increase in littering, zip."

"The parade of horrors that everyone predicted has not materialized. The sky has not fallen. To the contrary...California jurisdictions have shown that having medical cannabis in place does not impact...public safety." —San Francisco Supervisor David Campos

Those dispensaries that go through the permitting process or otherwise comply with local ordinances tend, by their very nature, to be those most interested in meeting community standards and being good neighbors. Many local officials surveyed by ASA said dispensaries operating in their communities have presented no problems, or what problems there may have been significantly diminished once an ordinance or other regulation was instituted.

Several officials said that regulatory ordinances had significantly improved relations with other businesses and the community at large. An Oakland city council staff member noted that prior to adopting a local ordinance the city had received reports of break-ins. However, the council staff member said that with the adoption of Oakland's dispensary ordinance, "That kind of activity has stopped. That danger has been eliminated." Assistant City Administrator Arturo Sanchez, a nuisance enforcement officer, affirmed that since 2004 he has "never received a nuisance complaint concerning lawfully established medical marijuana dispensaries in Oakland...[or] had to initiate an enforcement action."

The absence of any connection between dispensaries and increased local crime can be seen in data from Los Angeles and San Diego. During the two-year period from 2008 to 2010 in which Los Angeles saw the proliferation of more than 500 dispensaries, the overall crime rate in the city dropped considerably. A study commissioned by Los Angeles Police Chief Charlie Beck, comparing the number of crimes in 2009 at the city's banks and medical marijuana dispensaries, found that 71 robberies had occurred at the more than 350 banks in the city, compared to 47 robberies at the more than 500 medical marijuana facilities. Chief Beck observed that, "banks are more likely to get robbed than medical marijuana dispensaries," and that the claim that dispensaries attract crime "doesn't really bear out." In San Diego, where some officials have made similar allegations about increased crime associated with dispensaries, an examination of city police reports by a local paper, the San Diego City Beat, found that as of late 2009 the number of crimes in areas with dispensaries was frequently lower than it was before the dispensary opened or, at worst, stayed the same.

WHY DIVERSION OF MEDICAL CANNABIS IS TYPICALLY NOT A PROBLEM

One of the concerns of public officials is that dispensaries make possible or even encourage the resale of cannabis on the street. But the experience of those cities that have instituted ordinances is that such problems, which are rare in the first place, quickly disappear. In addition to being monitored by law enforcement, dispensaries universally have strict rules about how members are to behave in and around the facility. Many have "good neighbor" trainings for their members that emphasize sensitivity to the concerns of neighbors, and all dispensaries absolutely prohibit the resale of cannabis. Anyone violating that prohibition is typically banned from any further contact with the dispensary.

As Oakland's city administrator for the regulatory ordinance explains, "dispensaries themselves have been very good at self policing

against resale because they understand they can lose their permit if their patients resell."

In the event of an illegal resale, local law enforcement has at its disposal all of the many legal penalties provided by the state. This all adds up to a safer street environment with fewer drug-related problems than before dispensary operations were permitted in the area. The experience of the City of Oakland is a good example of this phenomenon. The city's legislative analyst, Lupe Schoenberger, stated that, "...[P]eople feel safer when they're walking down the street. The level of marijuana street sales has significantly reduced."

"The areas around the dispensaries may be some of the most safest areas of Oakland now because of the level of security, surveillance, etc. since the ordinance passed."

—Barbara Killey, Oakland

Dispensaries operating with the permission of the city are also more likely to appropriately utilize law enforcement resources themselves, reporting any crimes directly to the appropriate agencies. And, again, dispensary operators and their patient members tend to be more safety conscious than the general public, resulting in great vigilance and better preemptive measures. The reduction of crime in areas around dispensaries has been reported anecdotally by law enforcement in several communities.

DISPENSARIES CAN BE GOOD NEIGHBORS

Medical cannabis dispensing collectives are typically positive additions to the neighborhoods in which they locate, bringing additional customers to neighboring businesses and reducing crime in the immediate area.

Like any new business that serves a different customer base than the existing businesses in the area, dispensaries increase the revenue of other businesses in the surrounding area simply because new people are coming to access services, increasing foot traffic past other establishments. In many communities, the opening of a dispensary has helped revitalize an area. While patients tend to opt for dispensaries that are close and convenient, particularly since travel can be difficult, many patients will travel to dispensary locations in parts of town they would not otherwise visit. Even if patients are not immediately utilizing the services or purchasing the goods offered by neighboring businesses, they are more likely to eventually patronize those businesses because of convenience.

ASA's survey of officials whose cities have passed dispensary regulations found that the vast majority of businesses either adjoining or near dispensaries had reported no problems associated with a dispensary opening after the implementation of regulation.

Kriss Worthington, longtime councilmember in Berkeley, said in support of a dispensary there, "They have been a responsible neighbor and vital organization to our diverse community. Since their opening, they have done an outstanding job keeping the building clean, neat, organized and safe. In fact, we have had no calls from neighbors complaining about them, which is a sign of respect from the community. In Berkeley, even average restaurants and stores have complaints from neighbors."

Mike Rotkin, councilmember and former mayor for the City of Santa Cruz, said about the dispensary that opened there last year, "The immediately neighboring businesses have been uniformly supportive or neutral. There have been no complaints either about establishing it or running it."

And Dave Turner, Mayor of Fort Bragg, noted that before the passage of regulations there were "plenty of complaints from both neighboring businesses and concerned citizens," but since then, it is no longer a problem. Public officials understand that, when it comes to dispensaries, they must balance both the humanitarian needs of patients and the

concerns of the public, especially those of neighboring residents and business owners.

Oakland City Councilmember Nancy J. Nadel wrote in an open letter to her fellow colleagues across the state, "Local government has a responsibility to the medical needs of its people, even when it's not a politically easy choice to make. We have found it possible to build regulations that address the concerns of neighbors, local businesses, law enforcement and the general public, while not compromising the needs of the patients themselves. We've found that by working with all interested parities in advance of adopting an ordinance while keeping the patients' needs foremost, problems that may seem inevitable never arise."

Barbara Killey adds, "Dispensaries themselves have been very good at self policing against resale because they understand they can lose their permit if their patients resell."

Mike Rotkin of Santa Cruz stated that since the city enacted an ordinance for dispensarys, "Things have calmed down. The police are happy with the ordinance, and that has made things a lot easier. I think the fact that we took the time to give people who wrote us respectful and detailed explanations of what we were doing and why made a real difference."

BENEFITS OF DISPENSARIES TO THE PATIENT COMMUNITY

DISPENSARIES PROVIDE MANY BENEFITS TO THE SICK AND SUFFERING

Safe and legal access to cannabis is the reason dispensaries have been created by patients and caregivers around the state. For many people, dispensaries remove significant barriers to obtaining cannabis. Patients in urban areas with no space to cultivate cannabis, those without the requisite gardening skills to grow their own, and, most critically, those who face the sudden onset of a serious illness or who have suffered a catastrophic illness - all tend to rely on dispensaries as a compassionate, community-based solution as a preferable alternative to potentially dangerous illicit market transactions.

Many elected officials in California recognize the importance of dispensaries to their constituents. As Nathan Miley, former Oakland City councilmember and now Alameda County supervisor said in a letter to his colleagues, "When designing regulations, it is crucial to remember that at its core this is a healthcare issue, requiring the involvement and leadership of local departments of public health. A pro-active healthcare-based approach can effectively address problems before they arise, and communities can design methods for safe, legal access to medical marijuana while keeping the patients' needs foremost."

West Hollywood Mayor John Duran agreed, noting that with the high number of HIV-positive residents in the area, "Some of them require medical marijuana to offset the medications they take for HIV." Jane Bender, former mayor of Santa Rosa, says, "There are legitimate patients in our community, and I'm glad they have a safe means of obtaining their medicine."

And Mike Rotkin of Santa Cruz said that this is also an important matter for his city's citizens: "The council considers it a high priority and has taken considerable heat to speak out and act on the issue."

For more information, see www.AmericansForSafeAccess.org or contact the ASA office at 1-888-929-4367 or 510-251-1856.

It was a similar decision of social conscience that lead to Placerville's city council putting a regulatory ordinance in place. Former Councilmember Marian Washburn told her colleagues that "as you get older, you know people with diseases who suffer terribly, so that is probably what I get down to after considering all the other components."

"There are legitimate patients in our community, and I'm glad they have a safe means of obtaining their medicine." —Jane Bender, Santa Rosa

While dispensaries provide a unique way for patients to obtain the cannabis their doctors have recommended, they typically offer far more that is of benefit to the health and welfare of those suffering from both chronic and acute medical problems.

Dispensaries are often called "clubs" in part because many of them offer far more than a clinical setting for obtaining cannabis. Recognizing the isolation that many seriously ill and injured people experience, many dispensary operators choose to offer a wider array of social services, including everything from a place to congregate and socialize to help with finding housing and offering meals. The social support patients receive in these settings has far-reaching benefits that also influences the development of other patient-based care models.

RESEARCH SUPPORTS THE DISPENSARY MODEL

A 2006 study by Amanda Reiman, Ph.D. of the School of Social Welfare at the University of California, Berkeley examined the experience of 130 patients spread among seven different dispensaries in the San Francisco Bay Area. Dr. Reiman's study cataloged the patients' demographic information, health status, consumer satisfaction, and use of services, while also considering the dispensaries' environment, staff, and services offered. The study found that "medical cannabis patients have created a system of dispensing medical cannabis that also includes services such as counseling, entertainment and support groups, all important components of coping with chronic illness." She also found that levels of satisfaction with the care received at dispensaries ranked significantly higher than those reported for health care nationally.

Patients who use the dispensaries studied uniformly reported being well satisfied with the services they received, giving an 80% satisfaction rating. The most important factors for patients in choosing a medical cannabis dispensary were: feeling comfortable and secure, familiarity with the dispensary, and having a rapport with the staff. In their comments, patients tended to note the helpfulness and kindness of staff and the support found in the presence of other patients.

MANY DISPENSARIES PROVIDE KEY HEALTH AND SOCIAL SERVICES

Dispensaries offer many cannabis-related services that patients cannot otherwise obtain. Among them is an array of cannabis varieties, some of which are more useful for certain afflictions than others, and staff awareness of what types of cannabis other patients report to be helpful. In other words, one variety of cannabis may be effective for pain control while another may be better for combating nausea. Dispensaries allow for the pooling of information about these differences and the opportunity to access the type of cannabis likely to be most beneficial.

Cannabis-related services include making cannabis available in other forms for patients who cannot or do not want to smoke it. While most patients prefer to have the ability to modulate the dosing that smoking easily allows, for others, the effects of extracts or edible cannabis products are preferable. Dispensaries typically offer a wide array of edible products for those purposes. Many dispensaries

also offer classes on how to grow your own cannabis, classes on legal matters, trainings for health-care advocacy, and other seminars.

Beyond providing safe and legal access to cannabis, the dispensaries studied also offer important social services to patients, including counseling, help with housing and meals, hospice and other care referrals. Among the broader services the study found in dispensaries are support groups, including groups for women, veterans, and men; creativity and art groups, including groups for writers, quilters, crochet, and crafts; and entertainment options, including bingo, open mic nights, poetry readings, internet access, libraries, and puzzles. Clothing drives and neighborhood parties are among the activities that patients can also participate in through their dispensary.

Examples of health services offered at dispensaries across California:

- Naturopathic medicine
- Reiki
- Ayurvedic medicine
- Chinese medicine
- Chiropractic medicine
- Acupuncture
- Massage
- Cranial Sachral Therapy
- Rolfing Therapy
- Group & Individual Yoga Instruction
- Hypnotherapy
- Homeopathy
- Western Herbalists
- Individual Counseling
- Integrative Health Counseling
- Nutrition & Diet Counseling
- Limited Physical Therapy
- Medication Interaction Counseling
- Condition-based Support Groups

Social services such as counseling and support groups were reported to be the most commonly and regularly used, with two-thirds of patients reporting that they use social services at dispensaries 1-2 times per week. Also, life services, such as free food and housing help, were used at least once or twice a week by 22% of those surveyed.

"Local government has a responsibility to the medical needs of its people, even when it's not a politically easy choice to make. We have found it possible to build regulations that address the concerns of neighbors, local businesses law enforcement and the general public, while not compromising the needs of the patients themselves. We've found that by working with all interested parities in advance of adopting an ordinance while keeping the patients' needs foremost, problems that may seem inevitable never arise."

—Nancy Nadel, Oakland

Dispensaries offer chronically ill patients even more than safe and legal access to cannabis and an array of social services. The study found that dispensaries also provided other social benefits for the chronically ill, an important part of the bigger picture:

> Beyond the support that medical cannabis patients receive from services is the support received from fellow patients, some of whom are experiencing the same or similar physical/psychological symptoms.... It is possible that the mental health benefits derived from the social support of fellow patients is an important part of the healing process, separate from the medicinal value of the cannabis itself.

Several researchers and physicians who have studied the issue of the patient experience with dispensaries have concluded that there are other important positive effects stemming from a dispensary model that includes a component of social support groups.

Dr. Reiman notes that, "support groups may have the ability to address issues besides the

illness itself that might contribute to long-term physical and emotional health outcomes, such as the prevalence of depression among the chronically ill."

For those who suffer the most serious illnesses, such as HIV/AIDS and terminal cancer, groups of people with similar conditions can also help fellow patients through the grieving process. Many patients who have lost or are losing friends and partners to terminal illness report finding solace with other patients who are also grieving or facing end-of-life decisions. A medical study published in 1998 concluded that the patient-to-patient contact associated with the social club model was the best therapeutic setting for ill people.

CONCLUSION

After more than 14 years of existence, dispensaries are proving to be an asset to the communities they serve, as well as the larger community in which they operate. This is especially the case when public officials choose to implement local ordinances that recognize the lawful operation of dispensaries. Since the Medical Marijuana Program Act was enacted by the California legislature in 2004, more than 50 localities have adopted ordinances regulating dispensaries.

By surveying local officials and monitoring regulatory activity throughout the State of California, ASA has shown that once working regulatory ordinances are in place dispensaries are typically viewed favorably by public officials, neighbors, businesses, and the community at large, and that regulatory ordinances can and do improve an area, both socially and economically.

Dispensaries—now expressly legal under California state law—are helping revitalize neighborhoods by reducing crime and bringing new customers to surrounding businesses. They improve public safety by increasing the security presence in neighborhoods, reducing illicit market marijuana sales, and ensuring that any criminal activity gets reported to the appropriate law enforcement authorities.

More importantly, dispensaries benefit the community by providing safe access for those who have the greatest difficulty getting the medicine their doctors recommend: the most seriously ill and injured. Many dispensaries also offer essential services to patients, such as help with food and housing.

Medical and public health studies have also shown that the social-club model of most dispensaries is of significant benefit to the overall health of patients. The result is that medical cannabis patients rate their satisfaction with dispensaries as far greater than the customer-satisfaction ratings given to health care agencies in general.

Public officials across the state, in both urban and rural communities, have been outspoken in praise of the dispensary regulatory schemes they enacted and the benefits to the patients and others living in their communities.

As a compassionate, community-based response to the medical needs of more than 300,000 sick and suffering Californians, dispensaries, and the regulations under which they operate, are working.

For more information, see www.AmericansForSafeAccess.org or contact the ASA office at 1-888-929-4367 or 510-251-1856.

RECOMMENDATIONS FOR DISPENSARY REGULATIONS

Cannabis dispensaries have been operating successfully in California for more than 14 years with very few problems. And, although the legislature and courts have acted to make dispensaries legal under state law, the question of how to implement appropriate zoning laws and business licensing is still coming before local officials all across the state. What follows are recommendations on matters to consider, based on adopted code as well as ASA's extensive experience working with community leaders and elected officials.

COMMUNITY OVERSIGHT

In order to appropriately resolve conflict in the community and establish a process by which complaints and concerns can be reviewed, it can often be helpful to create a community oversight committee. Such committees, if fair and balanced, can provide a means for the voices of all affected parties to be heard, and to quickly resolve problems.

The Ukiah City Council created such a task force in 2005; what follows is how they defined the group:

> The Ukiah Medical Marijuana Review and Oversight Commission shall consist of seven members nominated and appointed pursuant to this section. The Mayor shall nominate three members to the commission, and the City Council shall appoint, by motion, four other members to the commission...
>
> Of the three members nominated by the Mayor, the Mayor shall nominate one member to represent the interests of City neighborhood associations or groups, one member to represent the interests of medical marijuana patients, and one member to represent the interests of the law enforcement community.
>
> Of the four members of the commission appointed by the City Council, two members shall represent the interests of City neighborhood associations or groups, one member shall represent the interests of the medical marijuana community, and one member shall represent the interests of the public health community.

ADMINISTRATION OF DISPENSARY REGULATIONS ARE BEST HANDLED BY HEALTH OR PLANNING DEPARTMENTS, NOT LAW ENFORCEMENT AGENCIES

Reason: To ensure that qualified patients, caregivers, and dispensaries are protected, general regulatory oversight duties - including permitting, record maintenance and related protocols - should be the responsibility of the local department of public health (DPH) or planning department. Given the statutory mission and responsibilities of DPH, it is the natural choice and best-suited agency to address the regulation of medical cannabis dispensing collectives. Law enforcement agencies are ill-suited for handling such matters, having little or no expertise in health and medical affairs.

Examples of responsible agencies and officials:

- Angels Camp—City Administrator
- Citrus Heights—City Manager
- Cotati—City Manager
- Dunsmuir—Planning Commission
- Eureka--Dept of Community Development
- Laguna Woods—City Manager
- Long Beach—Financial Management
- Los Angeles—Building and Safety
- Malibu—City Manager
- Napa—City Council

For more information, see www.AmericansForSafeAccess.org or contact the ASA office at 1-888-929-4367 or 510-251-1856.

- Palm Springs—City Manager
- Plymouth—City Administrator
- Sebastopol—Planning Department
- San Francisco—Dept. of Public Health
- San Mateo—License Committee
- Santa Barbara—Community Development
- Selma—City Manager
- Stockton—City Manager
- Visalia—City Planner

ARBITRARY CAPS ON THE NUMBER OF DISPENSARIES CAN BE COUNTER-PRODUCTIVE

Reason: Policymakers do not need to set arbitrary limitations on the number of dispensing collectives allowed to operate because, as with other services, competitive market forces and consumer choice will be decisive. Dispensaries that provide quality care and patient services to their memberships will flourish, while those that do not will fail.

Capping the number of dispensaries limits consumer choice, which can result in both decreased quality of care and less affordable medicine. Limiting the number of dispensing collectives allowed to operate may also force patients with limited mobility to travel farther for access than they would otherwise need to.

Artificially limiting the supply for patients can result in an inability to meet demand, which in turn may lead to unintended and undesirable effects such as lines outside of dispensaries, increased prices, and lower quality medicine, in addition to increased illicit-market activity.

Examples of cities and counties without numerical caps on dispensaries:

- Dunsmuir
- Fort Bragg
- Laguna Woods
- Long Beach
- Placerville
- Redding
- Ripon
- San Mateo
- Santa Barbara
- Selma
- Tulare
- Calaveras County
- Kern County
- City and County of San Francisco
- San Mateo County
- Sonoma County

RESTRICTIONS ON WHERE DISPENSARIES CAN LOCATE ARE OFTEN UNNECESSARY AND CAN CREATE BARRIERS TO ACCESS

Reason: As described in this report, regulated dispensaries do not generally increase crime or bring other harm to their neighborhoods, regardless of where they are located. And since travel is difficult for many patients, cities and counties should take care to avoid unnecessary restrictions on where dispensaries can locate. Patients benefit from dispensaries being convenient and accessible, especially if the patients are disabled or have conditions that limit their mobility.

It is unnecessary and burdensome for patients and providers to restrict dispensaries to industrial corners, far away from public transit and other services. Depending on a city's population density, it can also be extremely detrimental to set excessive proximity restrictions (to residences, schools or other facilities) that can make it impossible for dispensaries to locate anywhere within the city limits, thereby establishing a de facto ban on dispensing. It is important to balance patient needs with neighborhood concerns in this process.

PATIENTS BENEFIT FROM ON-SITE CONSUMPTION AND PROPER VENTILATION SYSTEMS

Reason: Dispensaries that allow members to consume medicine on-site have positive psychosocial health benefits for chronically ill people who are otherwise isolated. On-site consumption encourages dispensary members to take advantage of the support services that improve patients' quality of life and, in some cases, even prolong it. Researchers have shown that support groups like those offered by dispensaries are effective for patients with

a variety of serious illnesses. Participants active in support services are less anxious and depressed, make better use of their time and are more likely to return to work than patients who receive only standardized care, regardless of whether they have serious psychiatric symptoms. On-site consumption is also important for patients who face restrictions to off-site consumption, such as those in subsidized or other housing arrangements that prohibit smoking. In addition, on-site consumption provides an opportunity for patients to share information about effective use of cannabis and of specialized delivery methods, such as vaporizers, which do not require smoking.

Examples of localities that permit on-site consumption (many stipulate ventilation requirements):

- Alameda County
- Berkeley
- Kern County
- Laguna Woods
- Richmond
- San Francisco
- San Mateo County
- South El Monte

DIFFERENTIATING DISPENSARIES FROM PRIVATE PATIENT COLLECTIVES IS IMPORTANT

Reason: Private patient collectives, in which several patients grow their medicine collectively at a private location, should not be required to follow the same restrictions that are placed on retail dispensaries, since they are a different type of operation. A too-broadly written ordinance may inadvertently put untenable restrictions on individual patients and caregivers who are providing either for themselves or a few others.

Example: Santa Rosa's adopted ordinance, provision 10-40.030 (F):

> "Medical cannabis dispensing collective," hereinafter "dispensary," shall be construed to include any association, cooperative, affiliation, or collective of persons where multiple "qualified patients" and/or "primary care givers," are organized to provide education, referral, or network services, and facilitation or assistance in the lawful, "retail" distribution of medical cannabis. "Dispensary" means any facility or location where the primary purpose is to dispense medical cannabis (i.e., marijuana) as a medication that has been recommended by a physician and where medical cannabis is made available to and/or distributed by or to two or more of the following: a primary caregiver and/or a qualified patient, in strict accordance with California Health and Safety Code Section 11362.5 et seq. A "dispensary" shall not include dispensing by primary caregivers to qualified patients in the following locations and uses, as long as the location of such uses are otherwise regulated by this Code or applicable law: a clinic licensed pursuant to Chapter 1 of Division 2 of the Health and Safety Code, a health care facility licensed pursuant to Chapter 2 of Division 2 of the Health and Safety Code, a residential care facility for persons with chronic life-threatening illness licensed pursuant to Chapter 3.01 of Division 2 of the Health and Safety Code, residential care facility for the elderly licensed pursuant to Chapter 3.2 of Division 2 of the Health and Safety Code, a residential hospice, or a home health agency licensed pursuant to Chapter 8 of Division 2 of the Health and Safety Code, as long as any such use complies strictly with applicable law including, but not limited to, Health and Safety Code Section 11362.5 et seq., or a qualified patient's or caregiver's place of residence.

PATIENTS BENEFIT FROM ACCESS TO EDIBLES AND MEDICAL CANNABIS CONSUMPTION DEVICES

Reason: Not all patients can or want to smoke cannabis. Many find tinctures (cannabis extracts) or edibles (such as baked goods containing cannabis) to be more effective for

their conditions. Allowing dispensaries to carry these items is important to patients getting the best level of care possible. For patients who have existing respiration problems or who otherwise have an aversion to smoking, edibles and extracts are essential.

Conversely, for patients who do choose to smoke or vaporize, they need to procure the tools to do so. Prohibiting dispensaries from carrying medical cannabis consumption devices, often referred to as paraphernalia, forces patients to go elsewhere to procure these items. Additionally, when dispensaries do carry these devices, informed dispensary staff can explain their usage, and different functions, to new patients.

Examples of localities allowing dispensaries to carry edibles and delivery devices:

- Albany
- Angels Camp
- Berkeley
- Cotati
- Citrus Heights
- Eureka
- Laguna Woods
- Long Beach
- Los Angeles (city of)
- Malibu
- Napa
- Palm Springs
- Redding
- Richmond
- Santa Barbara
- Santa Cruz
- Sebastopol
- South El Monte
- Stockton
- Sutter Creek
- West Hollywood
- Alameda County
- Kern County
- Sonoma County

RESOURCES FOR MORE INFORMATION

A downloadable PDF of this report is online at AmericansForSafeAccess.org/DispensaryReport

A model dispensary ordinance can be seen at AmericansForSafeAccess.org/ModelOrdinance.

A regularly updated list of ordinances, moratoriums, and bans adopted by California cities and counties can be found at AmericansForSafeAccess.org/regulations.

You can find ASA chapters in your area at AmericansForSafeAccess.org/Chapters.

ASA Blog
AmericansForSafeAccess.org/blog

ASA Forums
AmericansForSafeAccess.org/forum

Medical and Scientific Information
AmericansForSafeAccess.org/medical

Legal Information
AmericansForSafeAccess.org/legal

Become a member of ASA
AmericansForSafeAccess.org/join

Contact ASA to order the DVD "Medical Cannabis in California"—interviews with elected officials and leaders who are implementing safe and effective regulations.

For more information, see www.AmericansForSafeAccess.org or contact the ASA office at 1-888-929-4367 or 510-251-1856.

APPENDIX A

CALIFORNIA CITIES AND COUNTIES THAT HAVE ADOPTED ORDINANCES REGULATING DISPENSARIES
(as of February 2011)

For an updated list, go to:
AmericansForSafeAccess.org/regulations

City Ordinances (42)

Albany
Angels Camp
Berkeley
Citrus Heights
Cotati
Diamond Bar
Dunsmuir
Eureka
Fort Bragg
Jackson
La Puente
Laguna Woods
Long Beach
Los Angeles
Malibu
Mammoth Lakes
Martinez
Napa
Oakland
Palm Springs
Placerville
Plymouth
Redding
Richmond
Ripon
Sacramento
San Carlos
San Francisco
San Jose
San Mateo
Santa Barbara
Santa Cruz
Santa Rosa
Sebastopol
Selma
South El Monte
Stockton
Tulare
Visalia
West Hollywood
Whittier
Yucca Valley

County Ordinances (9)

Alameda
Calaveras
Kern
San Luis Obispo
San Mateo
Santa Barbara
Santa Clara
Sonoma

APPENDIX B

ASA'S QUICK GUIDE FOR EVALUATING PROPOSED MEDICAL MARIJUANA DISPENSARY ORDINANCES IN CALIFORNIA

This is a quick guide on what should be, and what should not be, in city and county ordinances to best support safe access for medical cannabis patients.

What the ordinance MUST include:

- Allowance for over-the-counter/storefront sales (sometimes called reimbursements, contributions, or not-for-profit sales)
- Allowance for patients to medicate on-site
- Allowance for sale of cannabis edibles and concentrated extracts
- Distinction between Medical Cannabis Dispensing Collectives (MCDCs) and private patient collectives or cooperatives

What to look out for in proposed ordinances:

Is the general language and focus framed as a medical or healthcare issue, rather than a criminal justice or law enforcement problem?

Does the ordinance affirm that MCDCs should be organized to serve patients and have a "not-for-profit" business model?

Is there a cap on the number of MCDCs allowed to operate that could negatively impact accessibility, affordability and quality?

- How was the MCDC cap number determined (per capita, per pharmacy)?
- What criteria will be used to approve and license MCDCs?
- Will quality through competition be supported?

Zoning considerations:

- Will each MCDC be required to apply for a conditional use permit, or does the ordinance specify MCDCs as an enumerated business?
- Are there proximity restrictions or "buffer zones" from so-called "sensitive uses" which will make locating a dispensary onerous.
- Has a map been prepared that shows where the ordinance will require MCDCs to locate?

Does the ordinance provide for a community oversight committee tasked with any licensing or appeals processes?

- Will the oversight committee include patients, activists, MCDC operators, and members of the local community?

What are the MCDC requirements for book-keeping and records disclosure?

- Does the ordinance allow MCDCs to keep identifying information about its members off-site, to protect patient identities?
- Does law enforcement have unfettered access to patient records or is a subpoena required?

Are there caps on the number of patient-members an MCDC can serve?

Is on-site cultivation prohibited for MCDCs?

For more information, see www.AmericansForSafeAccess.org or contact the ASA office at 1-888-929-4367 or 510-251-1856.

APPENDIX C

ATTORNEY GENERAL, STATE OF CALIFORNIA, GUIDELINES FOR THE SECURITY AND NON-DIVERSION OF MARIJUANA GROWN FOR MEDICAL USE

August 2008

GUIDELINES REGARDING COLLECTIVES AND COOPERATIVES

Under California law, medical marijuana patients and primary caregivers may "associate within the State of California in order collectively or cooperatively to cultivate marijuana for medical purposes." (§ 11362.775.) The following guidelines are meant to apply to qualified patients and primary caregivers who come together to collectively or cooperatively cultivate physician-recommended marijuana.

A. **Business Forms**: Any group that is collectively or cooperatively cultivating and distributing marijuana for medical purposes should be organized and operated in a manner that ensures the security of the crop and safeguards against diversion for non-medical purposes. The following are guidelines to help cooperatives and collectives operate within the law, and to help law enforcement determine whether they are doing so.

1. **Statutory Cooperatives**: A cooperative must file articles of incorporation with the state and conduct its business for the mutual benefit of its members. (Corp. Code, § 12201, 12300.) No business may call itself a "cooperative" (or "coop") unless it is properly organized and registered as such a corporation under the Corporations or Food and Agricultural Code. (Id. at § 12311(b).) Cooperative corporations are "democratically controlled and are not organized to make a profit for themselves, as such, or for their members, as such, but primarily for their members as patrons." (Id. at § 12201.) The earnings and savings of the business must be used for the general welfare of its members or equitably distributed to members in the form of cash, property, credits, or services. (Ibid.) Cooperatives must follow strict rules on organization, articles, elections, and distribution of earnings, and must report individual transactions from individual members each year. (See id. at § 12200, et seq.) Agricultural cooperatives are likewise nonprofit corporate entities "since they are not organized to make profit for themselves, as such, or for their members, as such, but only for their members as producers." (Food & Agric. Code, § 54033.) Agricultural cooperatives share many characteristics with consumer cooperatives. (See, e.g., id. at § 54002, et seq.) Cooperatives should not purchase marijuana from, or sell to, non-members; instead, they should only provide a means for facilitating or coordinating transactions between members.

2. **Collectives**: California law does not define collectives, but the dictionary defines them as "a business, farm, etc., jointly owned and operated by the members of a group." (Random House Unabridged Dictionary; Random House, Inc. © 2006.) Applying this definition, a collective should be an organization that merely facilitates the collaborative efforts of patient and caregiver members - including the allocation of costs and revenues. As such, a collective is not a statutory entity, but as a practical matter it might have to organize as some form of business to carry out its activities. The collective should not purchase marijuana from, or sell to, non-members; instead, it should only provide a means for facilitating or coordinating transactions between members.

B. **Guidelines for the Lawful Operation of a Cooperative or Collective**: Collectives and cooperatives should be organized with sufficient structure to ensure security, non-diversion of marijuana to illicit markets, and compliance with all state and local laws. The

following are some suggested guidelines and practices for operating collective growing operations to help ensure lawful operation. 1. Non-Profit Operation: Nothing in Proposition 215 or the MMP authorizes collectives, cooperatives, or individuals to profit from the sale or distribution of marijuana. (See, e.g., § 11362.765(a) ["nothing in this section shall authorize . . . any individual or group to cultivate or distribute marijuana for profit"].

2. **Business Licenses, Sales Tax, and Seller's Permits**: The State Board of Equalization has determined that medical marijuana transactions are subject to sales tax, regardless of whether the individual or group makes a profit, and those engaging in transactions involving medical marijuana must obtain a Seller's Permit. Some cities and counties also require dispensing collectives and cooperatives to obtain business licenses.

3. **Membership Application and Verification**: When a patient or primary caregiver wishes to join a collective or cooperative, the group can help prevent the diversion of marijuana for non-medical use by having potential members complete a written membership application. The following application guidelines should be followed to help ensure that marijuana grown for medical use is not diverted to illicit markets:

a) Verify the individual's status as a qualified patient or primary caregiver. Unless he or she has a valid state medical marijuana identification card, this should involve personal contact with the recommending physician (or his or her agent), verification of the physician's identity, as well as his or her state licensing status. Verification of primary caregiver status should include contact with the qualified patient, as well as validation of the patient's recommendation. Copies should be made of the physician's recommendation or identification card, if any;
b) Have the individual agree not to distribute marijuana to non-members;
c) Have the individual agree not to use the marijuana for other than medical purposes;
d) Maintain membership records on-site or have them reasonably available;
e) Track when members' medical marijuana recommendation and/or identification cards expire; and
f) Enforce conditions of membership by excluding members whose identification card or physician recommendation are invalid or have expired, or who are caught diverting marijuana for non-medical use.

4. **Collectives Should Acquire, Possess, and Distribute Only Lawfully Cultivated Marijuana**: Collectives and cooperatives should acquire marijuana only from their constituent members, because only marijuana grown by a qualified patient or his or her primary caregiver may lawfully be transported by, or distributed to, other members of a collective or cooperative. (§§ 11362.765, 11362.775.) The collective or cooperative may then allocate it to other members of the group. Nothing allows marijuana to be purchased from outside the collective or cooperative for distribution to its members. Instead, the cycle should be a closed circuit of marijuana cultivation and consumption with no purchases or sales to or from non-members. To help prevent diversion of medical marijuana to nonmedical markets, collectives and cooperatives should document each member's contribution of labor, resources, or money to the enterprise. They also should track and record the source of their marijuana.

5. **Distribution and Sales to Non-Members are Prohibited**: State law allows primary caregivers to be reimbursed for certain services (including marijuana cultivation), but nothing allows individuals or groups to sell or distribute marijuana to non-members. Accordingly, a collective or cooperative may not distribute medical marijuana to any person who is not a member in good standing of the organization. A dispensing collective or cooperative may credit its members for marijuana they provide to the collective, which it may then allocate to other members. (§ 11362.765(c).) Members also may reimburse the collective or cooperative for marijuana that has been allocated to them. Any monetary reimbursement that members provide to the collective or cooperative should only be an amount necessary to cover overhead costs and operating expenses.

6. **Permissible Reimbursements and Allocations**: Marijuana grown at a collective or cooperative for medical purposes may be:

a) Provided free to qualified patients and primary caregivers who are members of the collective or cooperative;
b) Provided in exchange for services rendered to the entity;
c) Allocated based on fees that are reasonably calculated to cover overhead costs and operating expenses; or d) Any combination of the above.

7. **Possession and Cultivation Guidelines**: If a person is acting as primary caregiver to more than one patient under section 11362.7(d)(2), he or she may aggregate the possession and cultivation limits for each patient. For example, applying the MMP's basic possession guidelines, if a caregiver is responsible for three patients, he or she may possess up to 24 oz. of marijuana (8 oz. per patient) and may grow 18 mature or 36 immature plants. Similarly, collectives and cooperatives may cultivate and transport marijuana in aggregate amounts tied to its membership numbers. Any patient or primary caregiver exceeding individual possession guidelines should have supporting records readily available when:

a) Operating a location for cultivation;
b) Transporting the group's medical marijuana; and
c) Operating a location for distribution to members of the collective or cooperative.

8. **Security**: Collectives and cooperatives should provide adequate security to ensure that patients are safe and that the surrounding homes or businesses are not negatively impacted by nuisance activity such as loitering or crime. Further, to maintain security, prevent fraud, and deter robberies, collectives and cooperatives should keep accurate records and follow accepted cash handling practices, including regular bank runs and cash drops, and maintain a general ledger of cash transactions.

C. **Enforcement Guidelines**: Depending upon the facts and circumstances, deviations from the guidelines outlined above, or other indicia that marijuana is not for medical use, may give rise to probable cause for arrest and seizure. The following are additional guidelines to help identify medical marijuana collectives and cooperatives that are operating outside of state law.

1. **Storefront Dispensaries**: Although medical marijuana "dispensaries" have been operating in California for years, dispensaries, as such, are not recognized under the law. As noted above, the only recognized group entities are cooperatives and collectives. (§ 11362.775.) It is the opinion of this Office that a properly organized and operated collective or cooperative that dispenses medical marijuana through a storefront may be lawful under California law, but that dispensaries that do not substantially comply with the guidelines set forth in sections IV(A) and (B), above, are likely operating outside the protections of Proposition 215 and the MMP, and that the individuals operating such entities may be subject to arrest and criminal prosecution under California law. For example, dispensaries that merely require patients to complete a form summarily designating the business owner as their primary caregiver - and then offering marijuana in exchange for cash "donations" - are likely unlawful. (Peron, supra, 59 Cal.App.4th at p. 1400 [cannabis club owner was not the primary caregiver to thousands of patients where he did not consistently assume responsibility for their housing, health, or safety].)

2. **Indicia of Unlawful Operation**: When investigating collectives or cooperatives, law enforcement officers should be alert for signs of mass production or illegal sales, including (a) excessive amounts of marijuana, (b) excessive amounts of cash, (c) failure to follow local and state laws applicable to similar businesses, such as maintenance of any required licenses and payment of any required taxes, including sales taxes, (d) weapons, (e) illicit drugs, (f) purchases from, or sales or distribution to, non-members, or (g) distribution outside of California.

APPENDIX D — MODEL ORDINANCE

MODEL ORDINANCE FOR COLLECTIVES

WHEREAS voters approved Proposition 215 in 1996 to ensure that seriously ill Californians have the right to obtain and use cannabis for medical purposes and to encourage elected officials to implement a plan for the safe and affordable distribution of medicine; and

WHEREAS the California State Legislature adopted Senate Bill 420, the Medical Marijuana Program Act, in 2003 to help clarify and further implement Proposition 215 in part by authorizing Qualified Patients and Primary Caregivers to associate within the State of California in order collectively or cooperatively to cultivate cannabis for medical purposes; and

WHEREAS the California Attorney General published "Guidelines for the Security and Non-Diversion of Marijuana Grown for Medical Purposes" in 2008, acknowledging that "a properly organized and operated collective of cooperative that dispenses medical marijuana through a storefront may be lawful under California law," provided the facility substantially complies with state law; and

WHEREAS crime statistics and the accounts of local officials surveyed by Americans for Safe Access indicate that crime is actually reduced by the presence of a Medical Cannabis Dispensing Collective (MCDC); and complaints from citizens and surrounding businesses are either negligible or are significantly reduced with the implementation of sensible regulations; and

WHEREAS California courts have upheld the legality of MCDCs under state law, including People v. Hochanadel, 98 Cal.Rptr.3d 347, and People v. Urziceanu, 132 Cal.App.4th 747;

THEREFORE, BE IT RESOLVED That _____ does hereby enact the following:

Purposes and Intent

(1) To implement the provisions of California Health and Safety Code Sections 11362.5 and 11362.7, et seq., as described by the California Attorney General in "Guidelines For The Security And Non-diversion Of Marijuana Grown For Medical Use," published August 2008, which states in Section IV(C)(1) that "a properly organized and operated collective or cooperative that dispenses medical marijuana through a storefront may be lawful under California law," provided the facility substantially complies with the guidelines.

(2) To help ensure that seriously ill _____ residents can obtain and use cannabis for medical purposes where that medical use has been deemed appropriate by a physician in accordance with California law.

(3) To help ensure that the qualified patients and their primary caregivers who obtain or cultivate cannabis solely for the qualified patient's medical treatment are not subject to arrest, criminal prosecution, or sanction.

(4) To protect citizens from the adverse impacts of unregulated medical cannabis distribution, storage, and use practices.

(5) To establish a new section in the _____ code pertaining to the permitted distribution of medical cannabis in _____ consistent with state law.

Nothing in this ordinance purports to permit activities that are otherwise illegal under state or local law.

Definitions

The following phrases, when used in this Chapter, shall be construed as defined in California Health and Safety Code Sections 11362.5 and 11362.7:

"Person with an identification card;"
"Identification card;"
"Primary caregiver;" and
"Qualified patient."

The following phrases, when used in this Chapter, shall be construed as defined below:

"Medical Cannabis Dispensing Collective" or "MCDC". Qualified p atients, persons with identification cards and designated primary caregivers of qualified patients and persons with identification cards who associate, as an incorporated or unincorporated association, within _____, in order to collectively or cooperatively provide medical marijuana from a licensed or permitted location pursuant to this Chapter, for use exclusively by their registered members, in strict accordance with California Health and Safety Code Sections 11362.5 and 11362.7, et seq.

"Director." The Director of Planning or other person authorized to issue a Conditional Use Permit pursuant to _____ code.

Cities and counties may issue a business license or a Conditional Use Permit (CUP) to regulate MCDCs. If a jurisdiction opts for a business license model, the language in the following sections may be replaced with language authorizing the issuance of a business license by amending the appropriate code Sections: Conditional Use Permit Required, Application Procedures, and Findings.

Conditional Use Permit Required

A Conditional Use Permit shall be required to establish or operate a Medical Cannabis Dispensing Collective (MCDC) in compliance with the requirements of this Chapter when located in Commercial, Manufacturing, or Retail Zones.

Application Procedure

(1) In addition to ensuring compliance with the application procedures specified in Section _____, the Director shall send copy of the application and related materials to all other relevant City departments for their review and comment.

(2) A disclaimer shall be put on the MCDC zoning application forms that shall include the following:

a. A warning that the MCDC operators and their employees may be subject to prosecution under federal law; and

b. A disclaimer that the City will not accept any legal liability in the connection with any approval and/or subsequent operation of an MCDC.

Findings

In addition to the findings required to establish compliance with the provisions of Section _____, approval of a Conditional Use Permit for an MCDC shall require the following findings:

(1) That the requested use at the proposed location will not adversely affect the economic welfare of the nearby community;

(2) That the requested use at the proposed location is outside a Residential Zone;

(3) That the exterior appearance of the structure will be consistent with the exterior appearance of structures already constructed or under constructing within the immediate neighborhood, so as to prevent blight or deterioration, or substantial diminishment or impairment of property values within the neighborhood.

Location

The location at which an MCDC distributes medical cannabis must meet the following requirements:

(1) The location must be in a Non-Residential Zone appropriate for Commercial, Manufacturing, or Retail uses, including health care use;

(2) The location must not be within 600-foot radius of a school, as measured in Section 11362.768 of the California Health and Safety Code;

(3) The location must not be within 1,000 feet of another MCDC.

For more information, see www.AmericansForSafeAccess.org or contact the ASA office at 1-888-929-4367 or 510-251-1856.

Police Department Procedures and Training

(1) Within six months of the date that this Chapter becomes effective, the training materials, handbooks, and printed procedures of the Police Department shall be updated to reflect its provisions. These updated materials shall be made available to police officers in the regular course of their training and service.

(2) Medical cannabis-related activities shall be the lowest possible priority of the Police Department.

(3) Qualified patients, their primary caregivers, and MCDCs who come into contact with law enforcement shall not be cited or arrested and dried cannabis or cannabis plants in their possession shall not be seized if they are in compliance with the provisions of this Chapter.

(4) Qualified patients, their primary caregivers, and MCDCs who come into contact with law enforcement and cannot establish or demonstrate their status as a qualified patient, primary caregiver, or MCDC, but are otherwise in compliance with the provisions of this Chapter, shall not be cited or arrested and dried cannabis or cannabis plants in their possession shall not be seized if (1) based on the activity and circumstances, the officer determines that there is no evidence of criminal activity; (2) the claim by a qualified patient, primary caregiver, or MCDC is credible; and (3) proof of status as a qualified patient, primary caregiver, or MCDC can be provided to the Police Department within three (3) business days of the date of contact with law enforcement.

Operational Standards

(1) Signs displayed on the exterior of the property shall conform to existing regulations;

(2) The location shall be monitored at all times by closed circuit video recording system for security purposes. The camera and recording system must be of adequate quality, color rendition and resolution to allow the ready identification of any individual committing a crime anywhere on the site;

(3) The location shall have a centrally-monitored alarm system;

(4) Interior building lighting, exterior building lighting and parking area lighting must be in compliance with applicable regulations, and must be of sufficient brightness and color rendition so as to allow the ready identification of any individual committing a crime on site at a distance of no less than forty feet (a distance that should allow a person reasonable reaction time upon recognition of a viable threat);

(5) Adequate overnight security shall be maintained so as to prevent unauthorized entry;

(6) Absolutely cannabis product may be visible from the building exterior;

(7) Any beverage or edible produced, provided or sold at the MCDC containing cannabis shall be so identified, as part of the packaging, with a prominent and clearly legible warning advising that the product contains cannabis and that is it to be consumed only by qualified patients;

(8) No persons under the age of eighteen shall be allowed on site, unless the individual is a qualified patient and accompanied by his or her parent or documented legal guardian;

(9) At any given time, no MCDC may possess more cannabis or cannabis plants than would reasonably meet the needs of its registered patient members;

(10) A sign shall be posted in a conspicuous location inside the structure advising: "The diversion of cannabis (marijuana) for non-medical purposes is a violation of state law and will result in membership expulsion. Loitering at the location of a Medical Cannabis Dispensing Collective is also grounds for expulsion. The use of cannabis may impair a person's ability to drive a motor vehicle or operate heavy machinery.;

(11) No MCDC may provide medical cannabis to any persons other than qualified patients and designated primary caregivers who are registered members of the MCDC and whose status to possess cannabis pursuant to state law has been verified. No medical cannabis provided to a primary caregiver may be supplied to any person(s) other than the qualified patient(s) who designated the primary caregiver;

(12) No outdoor cultivation shall occur at an MCDC location unless: a) it is not visible from anywhere outside of the MCDC property; and b) secured from public access by means of a locked gate and any other security measures necessary to prevent unauthorized entry;

(13) No MCDC shall cause or permit the establishment or maintenance of the sale or dispensing of alcoholic beverages for consumption on the premises or off-site of the premises;

(14) No dried medical cannabis shall be stored in structures without at least four walls and a roof, or stored in an unlocked vault or safe, or other unsecured storage structure; nor shall any dried medical cannabis be stored in a safe or vault that is not bolted to the floor or structure of the facility; and

(15) Medical cannabis may be consumed on-site only as follows:

a. The smoking or vaporizing of medical cannabis shall be allowed provided that appropriate seating, restrooms, drinking water, ventilation, air purification system, and patient supervision are provided in a room or enclosed area separate from other MCDC service areas.

b. The maximum occupancy of the on-site consumption area shall meet applicable occupancy requirements.

c. The MCDC shall use an activated charcoal filter, or other device sufficient to eliminate all odors associated with medical cannabis use from adjoining businesses and public walkways. The fan used to move air through the filter shall have the capacity sufficient to ventilate the square footage of the separate room or enclosed area in which medical cannabis use is permitted.

(16) MCDCs must verify that each member (1) is legally entitled to posses or consume medical cannabis pursuant to state law; and (2) is a resident of the State of California.

(17) All MCDC operators, employees, managers, members, or agents shall be qualified patients or the designated primary caregivers of qualified patients. MCDC operators, employees, managers, members, or agents shall not sell, barter, give away, or furnish medicine to anyone who is not a qualified patient or primary caregiver, registered as a member of the MCDC, and entitled to possess cannabis under state law.

(18) MCDCs shall maintain accurate patient records necessary to demonstrate patient eligibility under the law for every MCDC member, including (1) a copy of a valid driver's license or Department of Motor Vehicle identification card, (2) a patient registration form, (3) a current valid letter of recommendation for the use of medical cannabis written by a state-licensed physician. All patient records shall be kept in a secure location, regarded as strictly confidential, and shall not be provided to law enforcement without a valid subpoena or court order.

(19) Operating hours for MCDCs shall not exceed the hours between 8:00 AM and 10:00 PM daily.

(20) MCDCs must have at least one security guard with a Guard Card issued by the California Department of Consumer Affairs on duty during operating hours.

Severability

If any section, sub-section, paragraph, sentence, or word of this Article is deemed to be invalid, the invalidity of such provision shall not affect the validity of any other sections, sub-sections, paragraphs, sentences, or words of this Article, or the application thereof; and to that end, the sections, sub-sections, paragraphs, sentences, and words of this Article shall be deemed severable.

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RAND Safety and Justice
A RAND INFRASTRUCTURE, SAFETY, AND ENVIRONMENT PROGRAM
TECHNICAL REPORT

Regulating Medical Marijuana Dispensaries

An Overview with Preliminary Evidence of Their Impact on Crime

Mireille Jacobson, Tom Chang, James M. Anderson, John MacDonald, Ricky N. Bluthenthal, Scott C. Ashwood

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Sixteen states and the District of Columbia have passed laws that allow certain individuals to use marijuana for medical purposes. Each year another state takes up this issue, either at the polls or in the legislature: At present, legislatures in more than half a dozen states are set to debate whether to adopt medical marijuana laws.

In this report, we provide an overview of state medical marijuana laws. We discuss current approaches to regulating the supply of medical marijuana, including capping the number of medical marijuana dispensaries, the retail shops that provide marijuana to individuals with a physician's recommendation for the drug, and banning them outright. We then take a closer look at the controversy over retail medical marijuana sales and crime.

To empirically evaluate the connection between medical marijuana dispensaries and crime, we report results from an ongoing analysis in the City of Los Angeles. Since 2005, the number of medical marijuana dispensaries in the city has grown rapidly. At its peak, the number of dispensaries in the city was estimated at 800 and was said to exceed the number of CVS pharmacies or Starbucks locations. In an effort to rein in this growth, Los Angeles ordered the closure of over 70 percent of the 638 dispensaries operating in the city in June 2010. We collected data on the number of crimes (overall and by type) reported per block in the City of Los Angeles and surrounding communities, such as Hollywood, Beverly Hills, and unincorporated areas of Los Angeles County. For this preliminary analysis, we analyzed data for the ten days prior to and ten days following the June 7, 2010, dispensary closures. We combined this with data from the Los Angeles City Attorney's Office on the exact location of dispensaries that were either subject to closure or allowed to remain open.

Together these data allowed us to analyze crime reports within a few blocks around dispensaries that closed relative to those that remained open. Comparing changes in daily crime reports within areas around dispensaries that closed relative to those that remained open, we found that crime increased in the vicinity of closed dispensaries compared with those allowed to remain open. These results occur within both a 0.3- and 0.6-mile radius of dispensaries but diminish with increasing distance. At 1.5 miles out, there is no perceptible change in crime. The effects are concentrated on crimes, such as breaking and entering and assault, that may be particularly sensitive to the presence of security.

We provide several hypotheses for what might drive these results, including the loss of on-site security and surveillance, a reduction in foot traffic, a resurgence in outdoor drug activity, and a change in police efforts. We consider the merits of each of these hypotheses and describe ways these might be tested in the future. In ongoing analysis, we are studying crimes for a longer period before and after the 2010 closures and assessing whether these effects vary according to characteristics of the neighborhoods surrounding dispensaries. We will also analyze closures leading up to a pending (but as of yet unscheduled) dispensary license lottery in the City of Los Angeles. Finally, we will analyze the closures directly determined by the lottery.

Recent events promise to bolster the importance of decentralized but locally regulated medical marijuana dispensaries. U.S. Attorneys have sent letters to officials in at least ten states that have been trying to implement centrally regulated supply systems. These letters urge caution, reminding the governors and their legislatures that the federal government will "vigorously" prosecute those involved in the manufacturing and distribution of marijuana, even if they are in compliance with state law. An implication of this federal action is that small-scale privately run

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The authors would like to thank Greg Ridgeway, Jon Caulkins, and reviewers Rosalie Pacula and Christopher Carpenter for their very helpful feedback on the draft manuscript.

dispensaries, operating in the shadow of federal law, will continue to be the most viable source of medical marijuana. Our work aims to inform the debate on local approaches to regulating this market.

Introduction

In 1996, California voters approved Proposition 215, the Compassionate Use Act, ushering in an era of state medical marijuana laws. Since then, a total of 16 states and the District of Columbia have passed laws allowing marijuana use for medical purposes.[1] In nearly every election cycle, another state contemplates the issue, either at the ballot box or in the legislature. The latest law (passed by Delaware's legislature) became effective on July 1, 2011 (Delaware Code, 2011). In addition, legislatures in ten other states are currently debating whether to join the others.

Medical marijuana laws present states with several unique challenges: (1) how to regulate the supply of marijuana for patients who cannot cultivate the drug themselves, while maintaining its criminal status for nonmedical purposes, and (2) how to reconcile state-sanctioned supply channels (and, to a lesser extent, individual use) with federal prohibition. Until quite recently the dominant approach, particularly in large cities and at the state level, has been benign neglect. Medical marijuana dispensaries, sometimes called pot shops or cannabis clubs, have sprung up through the cracks. Dispensaries typically sell marijuana and edible marijuana products to qualified patients. In some cases, customers/patients consume the marijuana on the premises. The strictness with which the sales of marijuana are limited to those with a bona fide medical need—and how that need is defined—varies widely by state. The enforcement of bona fide medical need also varies by local jurisdiction.

The proliferation of medical marijuana dispensaries in such places as Los Angeles, San Francisco, and Denver has raised the ire of some residents and public officials who believe that the dispensaries attract crime or, at the very least, create a public nuisance (McDonald and Pelisek, 2009; National Public Radio, 2009; Reuteman, 2010). Jurisdictions have responded in a myriad of ways, including capping the number of dispensaries, banning them outright, or, at the other extreme, proposing state-run or regulated dispensaries.

On its face, the claim that dispensaries are associated with crime seems plausible. Illegal drugs have long been associated with crime in the public's consciousness. Many remember the crack cocaine epidemic of the 1980s, when drug dealers battled to control local distribution—often with deadly consequences. In the current setting, the relationship between marijuana sales and crime could occur through several possible causal mechanisms. First, marijuana consumption, which is presumably higher at or near dispensaries, may have direct criminogenic effects on users. These effects are cited in the context of alcohol outlets, where openings (Teh, 2008) and availability (Scribner, MacKinnon, and Dwyer, 1995) in Los Angeles and other jurisdictions (Gorman et al., 1998; Scribner et al., 1999) are associated with increases in crime. While superficially plausible in this setting, some research suggests that marijuana use does not increase crime commission per se (Pacula and Kilmer, 2003) and may even inhibit aggressive behavior (Myerscough and Taylor, 1985; Hoaken and Stewart, 2003).

Second, crime could increase near dispensaries as users try to finance their drug use by theft or other crime. Third, the quasi-legal status of dispensaries could engender crime if customers, employees, or owners resort to violence to resolve disputes (Miron, 1999; Resignato, 2000). Finally, dispensaries, which are a direct source of drugs and cash, may offer opportunities to and thus attract criminals. Anecdotal evidence suggests that dispensaries have been subject to break-ins and robberies (e.g., see McDonald and Pelisek, 2009). However, it is unclear whether other types of businesses in the same locations would engender the same kind of crime.

The argument that marijuana use (medical or otherwise) increases crime has proven influential with policymakers: New York City's special narcotics prosecutor used it to prevent the passage of a medical marijuana bill in the state senate (Campanile, 2010), and law enforcement in Oregon raised it to oppose the recent initiative to create a state-run supply system (Measure 74), which was defeated in the November 2010 elections (Burke, 2010). However, the claim that marijuana dispensaries per se attract crime has not been rigorously empirically evaluated. Our work is the first systematic, independent analysis of this claim.[2]

[1] The states are Alaska, Arizona, California, Colorado, Delaware, Hawaii, Maine, Michigan, Montana, Nevada, New Jersey, New Mexico, Oregon, Rhode Island, Vermont, and Washington. While many states have laws that are broadly supportive of medical use—e.g., protecting patients from jail time, as in Maryland—only these 16 remove state penalties for the cultivation, possession, and use of marijuana for approved medical purposes (Marijuana Policy Project, 2008). Pacula et al. (2002) provide an overview of the myriad of state laws on medical marijuana.

[2] The Denver Police Department (Ingold, 2010) and the Colorado Springs Police Department (Rodgers, 2010) each analyzed the number of crimes around dispensaries and compared them with the numbers around banks, pharmacies, and other businesses. Neither found evidence that dispensaries attracted crime.

In this report we provide a brief overview of the history of state medical marijuana laws and current approaches to regulating medical marijuana supply. We then provide a case study of the City of Los Angeles, dubbed "the Wild West of Weed" (Philips, 2009), which has experienced rapid growth in medical marijuana dispensaries since 2005. We clarify the evolving regulatory landscape in the city and use its recent experience ordering the closure of over 70 percent of the 638 dispensaries operating within the city to evaluate the claim that marijuana dispensaries attract or cause crime. Surprisingly, we find that crime increased in the vicinity of the closed dispensaries relative to the vicinity of dispensaries allowed to remain open.

The Los Angeles experience continues to evolve. In January 2011, the city's dispensary closures were invalidated as the result of a legal challenge. In response, the city plans to allocate 100 dispensary licenses by lottery (Hoeffel, 2011c). However, these plans face ongoing legal challenge (Hoeffel, 2011d).

As Los Angeles and other jurisdictions around the nation consider ways to regulate marijuana dispensaries, this study should provide some empirical evidence to guide policymakers. Ultimately any sustained approach to supplying medical marijuana will have to balance a complex mix of legal, regulatory, political, and public safety concerns. Although more work remains to be done, our initial investi-gation suggests that the latter concern—namely, public safety—may not be as important as commonly believed.

The Control of Medical Marijuana: A Brief Overview

Like heroin and LSD, marijuana is classified under federal law as a Schedule I drug, meaning that it has high abuse potential and no accepted medical use (Grinspoon and Bakalar, 1993). It is illegal under federal law to cultivate, possess, or distribute marijuana for any purpose (Mikos, 2009).

Despite this status, the federal government makes marijuana available for medical purposes in a very limited way: through a "Compassionate Use" Investigational New Drug program that once allowed physicians to provide marijuana to approved patients on an experimental basis and through larger-scale research studies that require approvals from the Food and Drug Administration, a special Public Health Service panel, and the Drug Enforcement Administration (Harris, 2010). The Compassionate Use program, which was closed to new patients in 1992, never reached more than 36 patients total (Grinspoon and Bakalar, 1993), and federal approval to study marijuana is notoriously difficult to obtain (Harris, 2010). In both cases, marijuana must be acquired from the University of Mississippi, which runs the only federally approved grow site in the United States (Mikos, 2009).

Like the federal government, all states outlaw marijuana cultivation, possession, and distribution for nonmedical purposes, although some treat minor offenses as a civil rather than a criminal offense (Mikos, 2009). But an increasing number of states—16 and the District of Columbia as of July 2011—make an exception to allow cultivation, possession, and use for approved medical purposes. Most of these laws were passed through voter-approved initiatives (see Table 1).

Medical marijuana use has wide support in principle. Recent polls indicate that over 70 percent of Americans favor state laws allowing marijuana use for prescribed medical purposes (Pew Research Center, 2010). However, 44 percent would be somewhat or very concerned if a "store that sold medical marijuana" opened in their area (Pew Research Center, 2010). Perhaps as a consequence, medical marijuana laws have been remarkably ambiguous about key supply issues, until quite recently. While all allow registered patients to grow their own marijuana or designate somebody as their grower, none provides a mechanism for legally obtaining seeds or cuttings (Harrison, 2010).

Physicians can generally discuss marijuana's benefits and recommend its use to patients, though this practice is controversial in some states (Hoffmann and Weber, 2010).[3] They still cannot legally prescribe, dispense, or even advise patients on how to obtain the drug without violating federal law (Hoffmann and Weber, 2010). Moreover, although the anti-commandeering doctrine prohibits Congress from requiring states to prohibit medical marijuana (Mikos, 2009), a 2005 Supreme Court decision (*Gonzales v Raich*) reaffirmed that individuals who cultivate or possess marijuana legally under state law may be prosecuted under federal law (Hoffmann and Weber, 2010).[4]

[3] In *Conant v Walters*, 309 F.3d 629 (9th Cir. 2002), cert. denied, 540 U.S. 946 (2003), the United States Court of Appeals for the Ninth Circuit ruled that physicians had a First Amendment right to advise patients about marijuana. Judge Kosinski, concurring, argued that the federal government prohibiting doctors from discussing medical marijuana also violated the "commandeering" doctrine of *New York v United States*, 505 U.S. 144 (1992), and *Printz v United States*, 521 U.S. 898 (1997). While the Court of Appeals ruling is technically only binding on the states within the Ninth Circuit (California, Nevada, Washington, Oregon, Montana, Idaho, Arizona, Alaska, and Hawaii), it may prove influential in other jurisdictions.

[4] The U.S. Department of Justice (DOJ), which brought *Gonzales v Raich* to the Supreme Court, exercised this power regularly; it has raided 30 to 40 medical marijuana dispensaries in California since 2005 (Blum, 2009; Alex Johnson, 2009).

Table 1
Summary of State Medical Marijuana Laws

State	Year Passed	Date Effective	Voter Approved?	Maximum Patients per Caregiver	Dispensary Regulations
Alaska	1998	March 4, 1999	Yes	1	
Arizona	2010	November 29, 2010[a]	Yes	5[c]	State regulated
California	1996	November 6, 1996	Yes	None	Licensed through city or county business ordinances
Colorado	2000	June 1, 2001	Yes	5[c]	Authority given to localities
Delaware	2011	July 1, 2011[a]	No	5	State regulated
District of Columbia	2010	July 27, 2010[a]	Yes	1[c]	Will be city regulated
Hawaii	2000	December 28, 2000	No	None	
Maine	1999	December 22, 1999	Yes	5[c]	State regulated
Michigan	2008	December 4, 2008	Yes	5	
Montana	2004	November 2, 2004	Yes	None	Not allowed, but dispensaries are proliferating. The legislature is expected to pass regulations in 2011.
Nevada	2000	October 1, 2001	Yes	1	Not allowed, but several dispensaries are operating
New Jersey	2010	January 2011[a]	No	1	Will be state regulated
New Mexico	2007	July 1, 2007	No	4[c]	State regulated
Oregon	1998	December 3, 1998[b]	Yes	None	
Rhode Island	2006	January 3, 2006	No	5[c]	State regulated; program is on hold as of July 2011
Vermont	2004	July 1, 2004	No	1	
Washington	1998	November 3, 1998	Yes	1	State indicates that dispensaries are "not allowed"

[a] These programs are not yet active, as of August 2011.

[b] Oregonians defeated Measure 74 on the November 2010 ballot, which would have established a state-regulated supply system (Oregon Ballot Measure 74, 2010; "November 2, 2010, General Election Abstracts of Votes, State Measure No. 74," undated).

[c] Limits do not apply to dispensaries.

SOURCES: Arizona Medical Marijuana Act (2009), Council of the District of Columbia (2010), Delaware State Senate (2011), Harrison (2010), Johnson (2010), Maine State Law and Reference Library (2011), Malinowski (2011), O'Connell (2010), ProCon.org (2011a), Southall (2010), Washington State Department of Health (2011), and Whited (2009).

The Emerging Regulatory Framework: California and Beyond

Faced with these legal obstacles to purchasing medical marijuana, patients and buyers banded together to form cooperatives or buyer's clubs, later known as dispensaries. In California, the first cooperatives actually predate the state's medical marijuana law (Cohen, 2000). In October 1996, a month before Proposition 215 passed, the *Los Angeles Times* reported that six dispensaries were operating in the Bay Area and several others were open in Southern California (Curtis and Yates, 1996).[5] These dispensaries, like the first medical marijuana laws themselves, emerged, at least in part, out of AIDS activism (Reiman, 2010); AIDS wasting syndrome is one of the conditions for which the benefits of marijuana are least controversial (Watson, Benson, and Joy, 2000).

[5] The San Francisco Cannabis Buyers Club, which was founded in 1991 by Dennis Peron, a coauthor of Proposition 215, was likely the first dispensary (McCabe, 1996).

More dispensaries opened after Proposition 215 took effect. Their numbers increased rapidly after 2004, when California Senate Bill 420 (2003) established a (voluntary) patient identification card program and recognized a patient's right to cultivate marijuana through nonprofit collectives and cooperatives—i.e., dispensaries.[6] In accordance with Senate Bill 420, the California State Attorney General, Jerry Brown, later issued guidelines to prevent the diversion of medical marijuana (Brown, 2008). Among other things, these guidelines indicated that local jurisdictions had the right to further regulate dispensary operations, which seems to have set in motion a wave of city and county regulations.

As of May 2011, 42 cities and nine counties in California have ordinances regulating dispensary operations (Americans for Safe Access, 2011). While approaches vary, most dispensary regulations deal with the following core issues: licensure, zoning (including district and distance requirements), security systems, storage, on-site consumption, and signage (Salkin and Kansler, 2010). San Francisco, which in 2005 was one of the earliest cities to craft comprehensive dispensary regulations, established zoning and proximity restrictions, as well as ventilation requirements for dispensaries that obtained approval for on-site smoking.[7] Another "early adopter," West Hollywood, caps the number of dispensaries at four, limits business hours, prohibits on-site consumption, and sets zoning and proximity restrictions. It also requires each dispensary to have a neighborhood guard patrol within a two-block radius of a dispensary during business hours and to distribute the name and phone number of a staff person responsible for handling problems to neighbors within 100 feet of a dispensary (City Council of the City of West Hollywood, 2007). Many, primarily smaller, jurisdictions have moratoria on new dispensaries or outlaw them altogether (Americans for Safe Access, 2011).[8] City bans are currently being challenged in the ongoing case of *Qualified Patients Association v City of Anaheim* (see Hoeffel, 2010b; Carpenter, 2011).

While California allows counties and cities to regulate dispensaries, eight states—Arizona, Colorado, Delaware, Maine, New Mexico, New Jersey, Rhode Island, and Vermont—and the District of Columbia regulate medical marijuana dispensaries directly (see Table 2). Many passed regulations in an effort to avoid California's experience—the massive growth in dispensaries (Maas, 2009) and the patchwork of local ordinances that emerged in their wake.

In addition, they reacted to what had until recently been viewed as a softer federal stance on dispensaries. In March 2009, Attorney General Eric Holder announced that federal raids of dispensaries would be restricted to those involved in drug trafficking (Johnston and Lewis, 2009). Holder's announcement was seen as a dramatic change of policy from the Drug Enforcement Administration's dispensary raids during the George W. Bush administration. Headlines such as "A Federal About-Face on Medical Marijuana" (Meyer, 2009) and "Obama Administration to Stop Raids on Medical Marijuana Dispensers" (Johnston and Lewis, 2009) promoted the impression that dispensaries would be allowed to grow unimpeded by federal law enforcement, although DOJ later released a memorandum clarifying that the policy was not a green light for dispensaries (United States Department of Justice, 2009).

Recent efforts to regulate the supply of medical marijuana centralize the licensing and oversight of dispensaries, primarily at the state level. New Mexico, which in 2007 was the first to establish a state system to regulate medical marijuana production and distribution, licenses nonprofit providers and sets limits on the amount of marijuana they can grow and dispense (Holmes, 2010). Rather than capping the number of dispensaries, as is done in most state systems, New Mexico limits the number of patients any dispensary can serve to a total of four. Maine's regulatory system, which was created by a 2009 voter amendment to its 1999 medical marijuana law, licenses and regulates dispensaries as well, but caps their total number at eight.[9]

The specific caps chosen tend to be driven by geography. For example, New Jersey's law establishes six "alternative treatment centers" for medical marijuana, two in each of the northern, central, and southern parts of the state. At the very high end of caps, Arizona limits the number of dispensaries to 124 at the outset, "proportionate to the number of pharmacies in the state" (Lee, 2010). In 2013, Delaware will grant licenses to one state-regulated "compassion center" in each of its three counties based on a scoring system for safety, security, diversion prevention, and record-keeping plans. Three additional licenses will be granted in 2014. With the exception

[6] This right was affirmed in *People v Urziceanu* (2005), which reversed the conviction of a collective owner, Michael Urziceanu, for conspiracy to sell marijuana.

[7] The ordinance specifies, for example, the types of neighborhoods where dispensaries can operate and places a 1,000-foot buffer around schools and recreational facilities. For more detail, see City and County of San Francisco Planning Department (undated).

[8] As of May 2011, 152 cities and 13 counties ban dispensaries, and 96 cities and 15 counties have moratoria in effect.

[9] See Maine State Law and Reference Library (2011).

Table 2
Summary of State Dispensary Regulations

State	Enacted	Nonprofit?	Cap on Numbers?	Zoning Requirements	Quantity Limits?	Security
Arizona	November 29, 2010[a]	Yes	Yes—not to exceed 10% of pharmacies; will start at 124	Devolves to local jurisdictions	Yes	Security alarm system
Colorado	June 7, 2010	No	No, but caps are enacted at the local level	At least 1,000 feet from a school, alcohol or drug treatment facility, or child care facility	Yes	Video and alarm systems
Delaware	May 13, 2011[a]	Yes	1 in each of 3 counties, with 3 more in year 2	500 feet from a school	Yes	Alarm system
District of Columbia	July 27, 2010[a]	No	5	At least 1,000 feet from a school or youth center	Yes	Plan required
Maine	November 3, 2009	Yes	8	At least 500 feet from a school	Yes	Must demonstrate adequate security
New Jersey	January 2011[a]	Yes	6	Devolves to local jurisdictions; cannot be within 1,000 feet of a school	Yes	Plan required
New Mexico	December 15, 2008	Yes	No caps, but suppliers are limited to 4 patients	At least 300 feet from any school, church, or day care center	Yes	Not specified
Rhode Island	June 16, 2009[b]	Yes	3	At least 500 feet from a school	Yes	Security alarm system
Vermont	June 6, 2011[b]	Yes	4	At least 1,000 feet from a school or child care facility	Yes	Security alarm system

[a] These programs are not yet active in their entirety, as of August 2011.

[b] The dispensary system is not yet active, as of August 2011.

SOURCES: Arizona Medical Marijuana Act (2009), California Senate Bill 420 (2003), Delaware State Senate (2011), General Assembly of the State of Colorado (2010), General Assembly of the State of Vermont (2011), Maine Department of Health and Human Services, Division of Licensing and Regulatory Services (2010), New Jersey Register (2010), New Mexico Department of Health (undated), ProCon.org (2011b), and Rhode Island General Assembly (2009).

of Colorado, Maine, and New Mexico, the other state-regulated supply systems exist only on paper and have not yet issued licenses.[10] More states, such as Hawaii and Montana, have been actively contemplating the establishment of systems to regulate the supply of medical marijuana.

Many efforts to plan or implement central supply systems have slowed or ceased in recent months, after U.S. Attorneys in ten states sent letters to governors and other elected officials restating the conflict between state and federal law. The letters warned that those involved in the manufacture or distribution of marijuana risk civil or criminal penalties (see Table 3). In some cases, these letters responded to requests for guidance (seven states), but several others were sent on DOJ's own initiative (three states). Vermont and Hawaii appear to be pressing ahead despite these letters, but the response among other recipients and the likely chilling effect in states considering similar systems suggest that the regulation of medical marijuana supply may remain a local issue.[11]

[10] Colorado's system is in an interim phase. Colorado will not issue licenses until July 1, 2012 (originally 2011), but dispensaries that had filed an application by the August 1, 2010, deadline can continue to operate until that time. See Wyatt (2011) for discussion of the extension.

[11] One letter was sent to the City of Oakland, which had plans to establish four industrial-scale marijuana production facilities (Wholsen, 2010). It has since abandoned this plan. Although it is the rare jurisdiction that contemplates such an approach, local regulations will likely involve far less centralization.

Table 3
Summary of 2011 U.S. Attorney Letters Regarding Medical Marijuana

When	U.S. Attorney	District	To Whom	Letter Solicited?	Comments and Outcome
February 1	Melinda Haag	Northern California	Oakland City Attorney	Yes—guidance on Oakland ordinance	Warns that city's plans to license 4 industrial-scale production facilities could result in civil and criminal penalties. City suspended plans after receipt of letter.
April 12	Florence Nakakuni	Hawaii	Director, Public Safety	Yes—guidance on law to establish at least 1 dispensary	States that disruption and prosecution of drug trafficking is a core priority
April 14	Jenny Durkan, Michael Ormsby	Western and Eastern Washington	Governor	Yes—guidance on program to license growers and dispensaries	States that disruption and prosecution of drug trafficking is a core priority. Governor vetoes bill.
April 20	Michael Cotter	Montana	Several state legislators	Yes—guidance on proposal to license and regulate production and distribution	States that disruption and prosecution of drug trafficking is a core priority. New legislation passed will likely shut down hundreds of dispensaries.
April 26	John Walsh	Colorado	Colorado Attorney General	Yes—guidance on bill to clarify law that licenses marijuana dispensaries	DOJ will consider "appropriate civil and criminal" remedies. Law passes despite letter; extends moratorium on new dispensaries through 2012.
April 29	Peter Neronha	Rhode Island	Governor	No—responds to licensing of 3 "Compassion Centers"	States that prosecution of businesses that "market and sell marijuana" is a "core priority." Governor suspends program to license dispensaries.
May 2	Dennis Burke	Arizona	Director, Department of Health Services	No—responds to rules filed for dispensary licensing and other aspects of program	Governor filed suit against Burke and Attorney General Holder seeking clarification on the legal protections their law affords voters
May 4	Tristram Coffin	Vermont	Information not available	Yes—guidance on bill sought after Rhode Island received an unsolicited letter about proposed compassion centers	Bill passes and receives governor's signature
May 16	Thomas Delahanty II	Maine	Health and Human Services Committee	Yes—guidance on changes to law, such as making patient registration voluntary	DOJ will act "vigorously against individuals and organizations" involved in unlawful manufacturing and distribution
June 3	Dwight Holton	Oregon	Dispensary owners, operators, landlords	No—responds to dispensary growth	Letter signed by many Oregon DAs, sheriffs, and police chiefs. Warns of risk of prosecution, civil action, and asset seizure.

NOTE: DA = district attorney.

SOURCES: For letters from Rhode Island, Colorado, California, Hawaii, Washington, and Montana, see *Reason* (2011). For the Arizona letter, see Burke (2011). For the Oregon letter, see Holton (2011) and Richardson (2011). For details of the Vermont letter, see Hallenbeck (2011).

The Los Angeles Experience

The movement to regulate medical marijuana supply, and in particular to limit and tightly manage dispensary systems, has been fueled in part by the experience in Los Angeles. In this section, we study Los Angeles in order to put the current debate in proper historical context and to shed light on what remains an important issue for local regulations moving forward—the relationship between dispensaries and public safety.

The effort to regulate dispensaries in Los Angeles began in May 2005, when City Council member Dennis Zine requested a study of the city's dispensaries. His goal was to set the stage for drafting comprehensive land use regulations (Doherty, 2010).[12] In its report in July 2005, the Los Angeles Police Department (LAPD) identified four known dispensaries

[12] A description of the motion can be found at LACityClerk Connect (undated[a]).

within city limits, suggested that several others were operating at mobile sites, and claimed that dispensaries generated crime.[13] To substantiate these claims, the LAPD cited several felony narcotics arrests made at these dispensaries. They noted that "no reported non-narcotics related crimes can be attributed to these locations" but indicated that it was highly likely that "crimes such as theft, robbery and assault have occurred and will occur along with the sale of marijuana from these locations" (Bratton, 2005).

To address these concerns, the LAPD report called for restricting dispensaries to commercial areas, if the city chose not to ban them altogether. It further suggested prohibiting dispensaries from residential areas, near schools and colleges, and near both public and private recreational areas and recommended a set of regulations for those already in operation. In 2006, the City Attorney's Office issued its own report laying out various options for regulating dispensaries, including an outright ban based on federal law, an interim moratorium until state law is "further clarified," and a land use ordinance establishing zoning requirements.[14]

As detailed in Table 4, the city opted for an Interim Control Ordinance (ICO), which took effect almost a full year later in September 2007. The ICO placed a temporary moratorium on new dispensaries and required existing dispensaries to register with the city by November 13, 2007. To register, dispensaries had to present a City of Los Angeles Tax Registration Certificate, a State Board of Equalization seller's permit, a lease, proof of insurance, and dispensary membership forms. The broad goal of the ICO was to address concerns of neighborhood activists about the growth of dispensaries while buying the city some time to draft permanent legislation.

The ICO was also a response to the LAPD's fact sheet documenting a massive increase in dispensaries (from four to 98) between July 2005 and November 2006 and attempting to tie these dispensaries to an increase in crime in their reporting districts.[15] This link was summarized in the fact sheet's table of areas with dispensaries, the number of dispensaries, and the percentage change in crimes (robberies, burglaries, aggravated assaults, and burglary from auto) in these areas from July 30, 2005, to October 29, 2005, and from July 30, 2006, to October 28, 2006. No effort was made to isolate the change in crime near dispensaries from broader neighborhood-specific crime patterns or to compare them with the change around other neighborhood establishments, such as liquor stores, coffee shops, or banks.

Although the ICO was intended to halt the growth in dispensaries, it actually had the opposite effect. Hundreds of dispensaries opened subsequent to the moratorium after filing applications for "hardship exemption," requests that were allowed under the ICO (McDonald and Pelisek, 2009).[16] Many entrepreneurs quickly realized that the city would not prosecute these dispensaries until their hardship applications had been reviewed, and the City Council seemed in no hurry to review these applications. Indeed, the City Council did not rule on any applications before June 2009, after more than 500 applications had been submitted (Hoeffel, 2009a). To close this loophole, the city passed an ordinance on June 19, 2009, that amended the ICO to eliminate the hardship exemption.[17]

It was not until January 26, 2010, that the City Council approved final regulations. The new ordinance set the number of dispensaries in the city at 70.[18] Dispensaries that registered and had been operating legally in the city since the ICO were grandfathered, meaning that the number of legal dispensaries could exceed 70 in the short run. However, all dispensaries were subject to new zoning rules, including a 1,000-foot buffer between dispensaries and between dispensaries and "sensitive use" sites, such as schools, parks, and libraries. The ordinance also established a set of operating conditions. Dispensaries were required to have web-based closed-circuit television security systems, maintain security recordings for a minimum of 90 days, and make those recordings available to the police on request. The ordinance prohibited on-site consumption of marijuana, dispensary operation between the hours of 8:00 p.m. and 10:00 a.m., the sale of alcoholic beverages, and the entry of persons under the age of 18 without proof of patient qualification and the presence of a parent, legal guardian, or licensed attending physician.

On June 7, 2010, dispensaries that were not operating legally were to cease operations. The city sent "courtesy notices" to the 439 dispensaries that were being ordered to shut their doors.[19] Early reports indicated that most dispensaries ordered to close did so; the City Attorney's Office estimated that 20 to 30 stores were

[13] See Bratton (2005).
[14] See Delgadillo (2006).
[15] See Los Angeles Police Department, Narcotics Division (2006).
[16] The first set of hardship applications requested exemptions because of delays beyond the dispensaries' control, such as receiving a city business tax registration certificate, which prevented them from meeting the November 13, 2007, registration deadline. Later applicants provided a much wider range of justifications, such as that they provided a community service or that they could not officially register in 2007 because of the fear imposed by federal authorities (Hoeffel, 2009a).
[17] See Council of the City of Los Angeles (2009).
[18] See Council of the City of Los Angeles (2010a).
[19] See Romero (2010a) for a sample letter.

Table 4
Timeline of Events Impacting Medical Marijuana Dispensaries in Los Angeles and Beyond

Date	Law/Event	Key Details
November 5, 1996	Proposition 215: The Compassionate Use Act of 1996	California voters approve medical use of marijuana by 56%. Law took effect on November 6, 1996.
September 11, 2003	Senate Bill 420: Medical Marijuana Program Act of 2003	Law took effect on January 1, 2004. Establishes a voluntary ID program for qualified patients and provides some legal cover for medical marijuana dispensaries by validating access through "cooperatives and collectives." Authorizes localities to adopt and enforce laws consistent with the act. Also set possession limits, but they were struck down at the Appeals Court and State Supreme Court levels in 2008 and 2010, respectively.
May 23, 2006	L.A. County Ordinance No. 2006-0032	Law took effect on June 22, 2006. Allows medical marijuana dispensaries to operate in Los Angeles County with a conditional use permit. Limits hours, establishes distance requirements and other rules as part of Title 22.56 of the county's planning and zoning code. The law was replaced in 2010 by a ban on dispensaries.
December 14, 2006	LAPD fact sheet released	Fact sheet details the explosion of medical marijuana dispensaries in the City of Los Angeles, shows statistics to support the view that the dispensaries increase crime, and recommends a moratorium on new dispensaries and detailed regulations for existing dispensaries
September 14, 2007	ICO: L.A. Ordinance 179027	Placed a temporary moratorium on the opening of new medical marijuana dispensaries in the City of Los Angeles. Allows for a hardship exemption.
November 13, 2007	ICO registration deadline	Deadline for dispensary registration under the ICO
August 25, 2008	Brown guidelines released	California State Attorney General Jerry Brown issues guidelines to clarify details of Senate Bill 420
March 18, 2009	Holder announcement	U.S. Attorney General Eric Holder outlines new federal policy on medical marijuana dispensary raids
June 24, 2009	ICO amended via L.A. Ordinance 180749	Eliminates hardship exemption
October 19, 2009	Ogden memo	U.S. Deputy Attorney General David Ogden issues a memo clarifying federal policy on "investigations and prosecutions" in states that allow medical marijuana
January 26, 2010	L.A. Ordinance 181069 to regulate medical marijuana collectives passes	Caps the number of dispensaries in the city at 70. Allows existing dispensaries in excess of 70 to remain operational provided that they comply with the ICO and abide by new requirements. Dispensaries must be geographically distributed across L.A. community plan areas in proportion to the population; must be at least 1,000 feet from "sensitive use" buildings, such as schools and parks; and must not be located on a lot "abutting, across the street or alley from, or having a common corner with a residentially zoned area."
March 14, 2010	L.A. Ordinance 181069 takes effect	Dispensaries that are legally operating have 180 days to meet zoning requirements.
June 7, 2010	L.A. Ordinance 181069, Chapter IV, Article 5.1, takes effect	As part of the ordinance, the city shuts down the more than 400 dispensaries that had not registered by November 13, 2007. Offenders face civil penalties of $2,500 per day and may receive up to six months in jail. The remaining dispensaries have 180 days to comply with the new zoning requirements, which, in many cases, means moving.
August 25, 2010	Villaraigosa memo	City states that 128 of the remaining 169 dispensaries must shut down because they had changes in management, which were precluded under the ICO. City allows these dispensaries to remain open until the courts can rule on the decision's legality.
November 23, 2010	Los Angeles County and Orange County approve bans	Both the Los Angeles County Board of Supervisors and the Orange County Board of Supervisors vote to ban dispensaries in unincorporated parts of their counties.
November 24, 2010	Koretz-Hahn and other amendments to L.A. Ordinance 181069	City Council adopts amendments that clarify and effectively loosen the "same ownership and management" requirements and extend the timeline for full compliance for "qualifying" dispensaries. Mayor has until December 6, 2010, to decide on the amendments.
December 10, 2010	Mohr injunction	Los Angeles County Superior Court Judge Anthony J. Mohr grants an injunction that bars the city from enforcing key aspects of L.A. Ordinance 181069, including closures based on the moratorium
January 25, 2011	L.A. Ordinance 181530 takes effect	Amends L.A. Ordinance 181069 to cap the number of dispensaries at 100 among those continuously operating since September 14, 2007. Allocates permits by lottery.

SOURCES: Brown (2008), California Senate Bill 420 (2003), Compassionate Use Act of 1996, Council of the City of Los Angeles (2007), Council of the City of Los Angeles (2009), Council of the City of Los Angeles (2010a), Council of the City of Los Angeles (2010b), Council of the City of Los Angeles (2011), Hoeffel (2010a), Hoeffel (2011b), Hoeffel (2010d), Hoeffel (2010e), Johnston and Lewis (2009), LACityClerk Connect (undated[b]), Lagmay (2010), Los Angeles County Department of Regional Planning (2009), Los Angeles Police Department, Narcotics Division (2006), and United States Department of Justice (2009).

still open illegally, and the LAPD conducted raids on at least four defiant stores (Rubin and Hoeffel, 2010).[20] Another 186 were deemed in compliance and could apply for permits to remain operational. Of these, 170 dispensaries notified the City Clerk of their intention to register, even though many would have to move to meet the new zoning requirements (Guerrero, 2010). Only 41 were in full compliance with the eligibility requirements of the new ordinance (Hoeffel, 2010c).[21]

Most of the other dispensaries failed to meet a requirement that they have the same ownership and management as identified in their ICO registration (Banks, 2010). The City Attorney's Office released the list of the dispensaries deemed eligible and ineligible but said that it would not close any dispensaries until the many legal challenges to the ordinance were resolved (Hoeffel, 2010c; Lagmay, 2010). Efforts were under way to abolish the continuous management requirement, which would have allowed a total of 180 dispensaries to remain in operation (Romero, 2010b). However, in January 2011, a Los Angeles County Superior Court judge issued an injunction barring the city from enforcing many aspects of the medical marijuana ordinance, including dispensary closures based on registration (or lack thereof) at the time of the moratorium (Hoeffel, 2010c). The judge suggested that alternative approaches, including allowing dispensaries to remain open if they could prove they were in operation on the date the moratorium took effect, would be permissible.

To that end, on January 22, 2011, the L.A. City Council amended its ordinance. It now caps the number of dispensaries at 100 among those that can demonstrate continuous operation since September 14, 2007 (Hoeffel, 2011b); 100 permits will be distributed by lottery. According to the City Clerk's Office, 228 dispensaries have applied to participate in the lottery (Hoeffel, 2011c). The date of the lottery has not yet been determined, as of August 2011. The city has begun notifying dispensaries that did not apply to participate in the lottery or cannot demonstrate continuous operation that they must shut down (Hoeffel, 2011c). However, the legality of the lottery is already being challenged (Hoeffel, 2011d).

Evaluating the Dispensary–Crime Connection

One of the principal reasons behind the city's effort (and similar efforts in other jurisdictions) to limit dispensaries is the presumed connection to crime. Residents neighboring dispensaries complain about crime and other quality of life concerns (Romero, 2010c). In Los Angeles, increased crime around dispensaries was explicitly cited as a reason that the City Council decided to restrict dispensaries.[22] Los Angeles County Sheriff Lee Baca has publically stated that dispensaries have been "hijacked" by criminals and have become crime targets (Winton, 2010). Countless media outlets have reported this claim.[23] But despite its plausibility, we know of no systematic evaluation of the claim that dispensaries themselves attract or cause crime.

To fill the gap in our knowledge, we use the first round of dispensary closures in the City of Los Angeles to assess the impact of dispensaries on crime. Figure 1 shows the geographic distribution of medical marijuana dispensaries by closure status. For each dispensary, we collected data on the number of crimes (overall and by type) reported per block in the City of Los Angeles and surrounding communities, such as Hollywood, Beverly Hills, and unincorporated areas of Los Angeles County. Data were extracted from CrimeReports (undated), an online software mapping tool that allows law enforcement agencies to spatially analyze their crime data and share these data with the public.

According to CrimeReports, its software is used by more than 700 law enforcement agencies across North America. During our study period, the LAPD subscribed to this service, allowing us to extract data on crimes by type, day, and city block. The LAPD no longer uses CrimeReports, possibly because it is launching its own mapping system.[24] During our time period, we compared the data from CrimeReports with those publically available through the LAPD's website. The data correspond very closely. However, the data provided by the LAPD are only available for four crime categories (versus 13 categories from CrimeReports) and are not available for jurisdictions that neighbor the City of Los Angeles.

Importantly, the CrimeReports data capture reported offenses or incidents rather than arrests. This distinction is important for several reasons. First, arrests typically undercount crime, since many incidents, even those in which an offender is apprehended, do not result in processed arrests. Second,

[20] Some stores simply removed their inventory, awaiting legal challenges. See Guerrero (2010) for details.

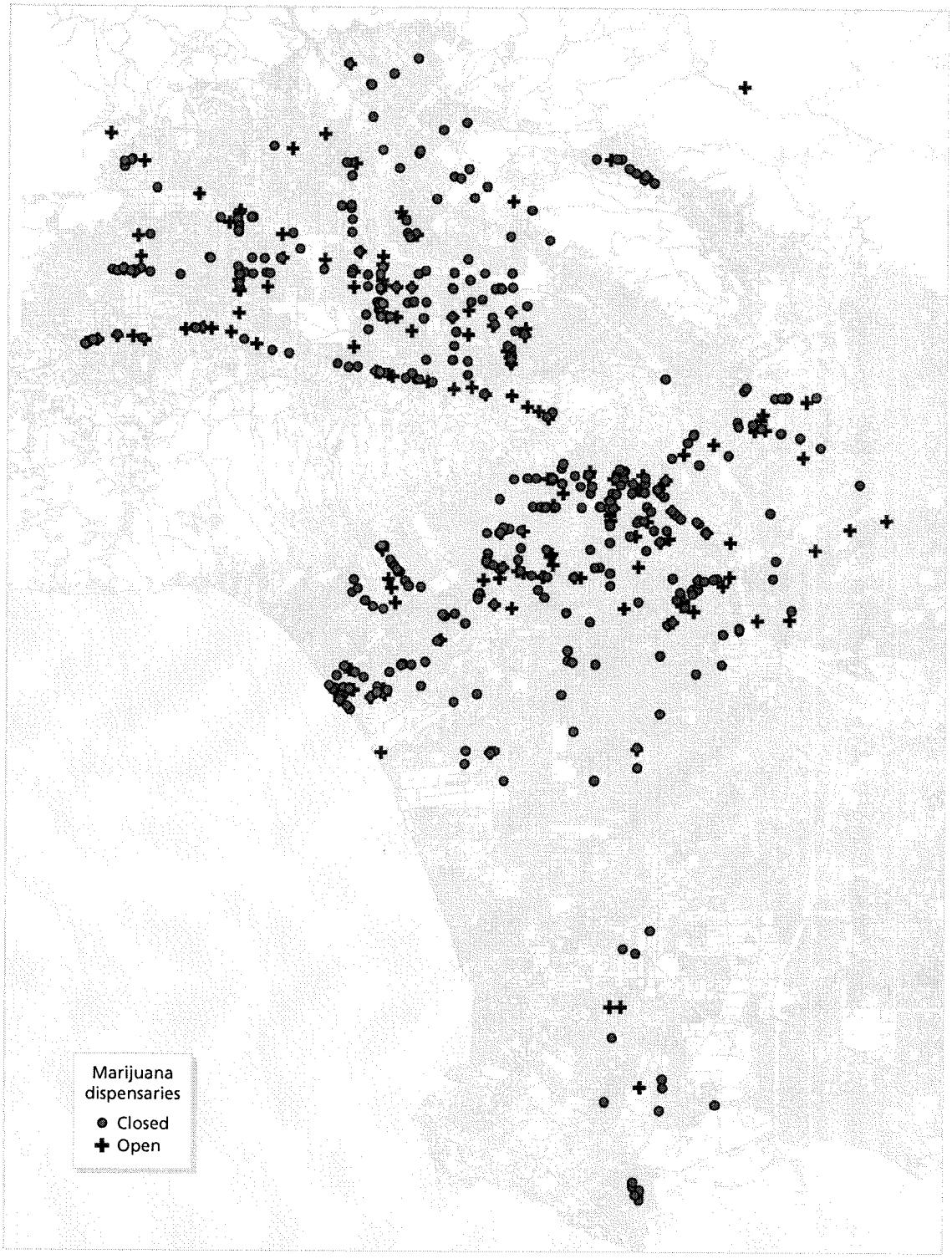
[21] See Los Angeles Municipal Code Section 45.19.6.2.B.2 for the full set of requirements (available at Council of the City of Los Angeles [2010a]).

[22] See the fifth paragraph of Ordinance 181069 (Council of the City of Los Angeles, 2010a).

[23] Examples abound. See Del Barco (2010), which asserts that "[s]ome of the city's marijuana dispensaries have become magnets for criminals wanting cash and pot, and even the site of murders, including a recent triple homicide."

[24] See Los Angeles Police Department (2011).

Figure 1
Geographic Distribution of Medical Marijuana Dispensaries in Los Angeles as of June 7, 2010



the potential lag between the commission of a crime and an arrest means that a long time horizon is required to link arrests back to the period around the closures. Third, arrest data typically do not contain precise-enough geographic information to link an incident to an exact city block.

For this preliminary analysis, we used crime data for the ten days prior to and ten days following the June 7, 2010, closures of dispensaries. We combined these data with information from the Los Angeles City Attorney's Office on the exact locations of dispensaries that were either subject to closure or allowed to remain open. We analyzed crime reports within 0.3, 0.6, 1.5, and 3 miles of dispensaries that closed relative to those that remained open.[25] In total, our dataset includes 21 days of crime reports for 600 dispensaries; 170 of these dispensaries were allowed to remain open, and 430 were ordered to close.

Table 5 presents basic summary statistics on our main outcomes: total daily crimes reported, as well as thefts, breaking and entering incidents, and assaults. We chose these categories of crimes because they are the most common. In Table A.1 we show the difference in pre-closure crime counts for dispensaries allowed to remain open relative to those ordered to close. In general, with a few exceptions, the differences are small and not statistically distinguishable from zero. This suggests that open dispensaries may serve as a reasonable control group for those ordered to close, although our empirical analysis will rely on comparability in crime trends rather than levels.

Table 5
Summary Statistics: Average Number of Crimes Surrounding Dispensaries per 100 Days

	Radius Around Dispensary			
Crime Type	0.3 Miles	0.6 Miles	1.5 Miles	3 Miles
Total crimes	2.2	7.0	43.5	133
Theft	1.3	3.9	21.9	62.2
Breaking and entering	0.4	1.2	7.5	20.8
Assault	0.2	0.9	6.9	23.7
Observations	12,600	12,600	12,600	12,600

NOTES: Data are from CrimeReports (undated) for May 28, 2010, through June 17, 2010. Data for these 21 days cover the areas surrounding 600 dispensaries, 430 that were subject to closure on June 7, 2010, and 170 that were allowed to remain open. A few (nine) dispensaries are not included because of a lack of coverage by CrimeReports. Theft includes general theft, theft from a vehicle, and theft of a vehicle. Assault includes assault with a deadly weapon. Other crime categories include homicide, robbery, sexual offense, "other," quality of life, and traffic.

We estimated the effect of dispensaries on crime in a simple difference-in-differences framework, comparing changes in daily crime reports within the specified areas around dispensaries that closed relative to those that remained open. More specifically, we run an Ordinary Least Squares (OLS) regression of the following basic form (Equation 1):

$$Crime_{dt} = \alpha_d + \beta 1(date > june7) * 1(closed) + \delta_t + \varepsilon_{dt}, \quad (1)$$

where *Crime* is the number of crimes within a given radius of dispensary d on day t, α_d is a dispensary fixed effect, and δ_t are fixed effects for the exact date. We include an interaction between $1(date > june\ 7)$, an indicator for dates after the June 7, 2010, closures, and $1(closed)$, an indicator for dispensary closure status, as determined by city orders. The main post–June 7, 2010, and closure indicators are subsumed in the dispensary and date fixed effects. All standard errors allow for serial correlation of an arbitrary structure (i.e., they are clustered) at the dispensary level. Our main coefficient of interest is β, which captures the change in crime around dispensaries that closed relative to those that remained open.[26]

The identifying assumption in the difference-in-differences framework is that crime in the areas around dispensaries subject to closure is similar to that in the areas around dispensaries allowed to remain open. Because we are focusing on such a small time window around the city's closure deadline, this assumption may not be unreasonable. However, the narrow window comes with the drawback that we cannot make any claims about the long-term changes associated with dispensary closures.

Our primary results are presented in Table 6. The difference-in-differences estimates indicate that crime actually *increases* in the neighborhood (0.3 to 0.6 of a mile) around dispensaries that closed compared with those that remained open.[27] Specifically, we find that total crime increases by about 60 percent

[25] The radii calculations used here are not corrected for the curvature of the earth. Chang and Jacobson (2011) find very similar results when this correction is made.

[26] Since dispensaries tend to cluster (see Figure 1 and also Figure 2, which zooms into the neighborhood of Venice), a given radius may capture crime around both closed and open dispensaries. This is problematic for the empirical strategy only if the clustering is by closure status. Chang and Jacobson (2011) show that clustering is independent of closure status, meaning that the likelihood that a closed dispensary is near another closed dispensary is the same as the likelihood that an open dispensary is near a closed dispensary. In this case, clustering may reduce power and decrease the precision of our estimates. Assuming that the effect of closure clustering does not have multiplicative effects, it will generate a lower bound estimate of the true effect of closures on crime. This type of power issue should diminish with distance around the dispensary, since the contribution of any cluster to the radius will be reduced.

[27] Table 7 reports the results of Table 5 (including confidence intervals) in percentage terms.

Table 6
Average Increase in Daily Crime Reports Associated with Closures, with Confidence Intervals

Crime Type	Radius Around Dispensary			
	0.3 Miles	0.6 Miles	1.5 Miles	3 Miles
Total crimes	0.013 (0.006) 59% [5.4%, 114%]	0.017 (0.008) 24% [0.4%, 47%]	0.005 (0.020) 1.1% [–8%, 10%]	0.012 (0.034) 0.9% [–4.2%, 6%]
Theft	0.006 (0.006) 46% [–0.01%, 77%]	0.006 (0.006) 15% [–13%, 46%]	0.015 (0.016) 6.8% [–7.7%, 21%]	–0.017 (0.026) –2.7% [–10.7%, 5.4%]
Breaking and entering	0.006 (0.003) 150% [–5%, 275%]	0.007 (0.004) 58% [–5%, 125%]	–0.003 (0.009) –4% [–27%, 18.6%]	0.001 (0.013) 0.4% [–12%, 13%]
Assault	0.003 (0.002) 150% [–7.5%, 400%]	0.008 (0.003) 89% [13%, 166%]	0.004 (0.010) 5.8% [–22%, 34.7%]	0.0001 (0.019) 0.042% [–15%, 16%]
Observations	12,600	12,600	12,600	12,600

NOTES: Data are from CrimeReports (undated) for May 28, 2010, through June 17, 2010, for areas of the specified distance surrounding dispensaries. We have 21 days of data for 600 dispensaries; 430 were ordered to close, and 170 were allowed to remain open. Each cell represents a separate regression. The first entry in each cell is the coefficient on β from Equation 1 and represents the change in crimes post-closure. All regressions include date fixed effects and dispensary fixed effects. Standard errors are clustered at the dispensary level and given in parentheses. We also present the percentage change in crime that this estimate represents, relative to the mean crime count, and the 95-percent confidence intervals expressed as a percentage in brackets.

within 0.3 miles of a closure relative to 0.3 miles around an open dispensary.[28] The effect diminishes with distance: Within 0.6 miles the increase is about 25 percent, and by 1.5 miles out there is no perceptible change in crime. The effects are concentrated on crimes, such as assault and breaking and entering, that may be particularly sensitive to the presence of security. Incidents of breaking and entering increase by about 50 percent within four blocks, and assaults increase by about 90 percent after the dispensaries are closed. While these results are statistically significant and imply very large increases in crime, our confidence intervals are quite wide, so the estimated increase should be interpreted with some caution.[29]

We performed several sensitivity analyses and robustness checks (shown in the appendix). First, to test the sensitivity of our results to specifying crime in levels, we estimated models that analyze the log of crime plus 0.1; we add 0.1 because in small-enough areas or categories, there are no crimes, and thus the log is not defined. Results from this specification (in Table A.2) are qualitatively similar, though they suggest small percentage increases.[30] Second, because neighborhoods around dispensaries that remain open and those that close may differ even prior to the closures, we replicated our analysis on the sample of dispensaries from zip codes in which some dispensaries were allowed to remain open and others were subject to closure. Results from this "matched" sample (provided in Table A.3) are qualitatively similar, although they are slightly larger and more precisely estimated for both total crime counts and breaking and entering. Finally, we replicated our analysis on the main sample but recode as open those dispensaries that, according to reports from the *Los Angeles Times* and *LA Weekly*, remained open even though they were ordered to close.[31] Accounting for these defiant dis-

[28] The 60 percent figure is calculated by dividing the mean change in total crimes post-closure, 0.013, from Table 5 by the mean of 0.022 total daily crimes within 0.3 miles reported in Table 4.

[29] Although these effects seem large, work on the effects of drug enforcement on crime often finds very large effects. For example, Miron (1999) finds that a 1-percent increase in drug enforcement expenditures or projected expenditures is associated with increases in the homicide rate on the order of 25 to 50 percent, relative to the maximum value of the homicide rate in the sample (rather than the mean, as we use here).

[30] A preferred model for crime counts might be a Poisson or negative binomial regression. However, because of the sparseness of the data at small distances (e.g., 0.3 or 0.6 miles), these models often cannot be solved (i.e., they do not converge). Where they do converge, the percentage change in crime is quite similar to the implied effects from our main specification in Table 6.

[31] Defiant dispensaries were identified based on the following reports: Rubin and Hoeffel (2010) and Wei and Romero (2010).

pensaries yields results (provided in Table A.4) that are again qualitatively similar, although they are slightly larger and/or more precisely estimated for total crime counts, theft, and breaking and entering.

We note that these findings are based on data collected around a relatively small window (ten days) before and after the closing of the dispensaries.

Discussion: Why Would Crime Decrease After Dispensary Closings?

In the previous section, we demonstrated that the closing of marijuana dispensaries in Los Angeles was associated with a rather immediate and sharp increase in total crime and in theft, breaking and entering, and assault. Given the conventional association between drug markets and crime, these findings are surprising. Here we offer a handful of possible explanations and suggestions for future research.

First, marijuana dispensaries in operation may have reduced crime by providing additional on-site security. California regulations require that dispensaries ensure adequate security. As a result of the value of marijuana and the cash necessary to run a dispensary, many dispensaries employ security services, in some cases around the clock. These security services may reduce crime in the immediate neighborhood, particularly such crimes as breaking and entering and robbery, which may respond more to formal and informal observation. Such an effect has been observed in studies of business improvement districts that pay for security services in neighborhoods in Los Angeles (Brooks, 2008; Cook and MacDonald, 2011). Future research might test this hypothesis by determining the extent of security that the various dispensaries employed to see if that had an effect on the reduction.

Second, operating marijuana dispensaries may reduce crime by increasing local foot traffic and "eyes on the street." Many of the marijuana dispensaries operated with extended hours. These extended hours may have brought more foot traffic to the neighborhood, which may, in turn, have deterred the "dark alley" crimes that were associated with a closing of the dispensaries. This may have interacted with the security explanation, if the dispensaries provided guards visible on the street to protect their customers. This hypothesis might be tested by comparing the effect of the dispensary closures with some other category of store closure—perhaps pharmacies, which have somewhat similar issues, or other retail operations. Such a comparison might test whether there is an effect specific to marijuana dispensaries or whether closing any retail establishment increases local crime. On the other hand, such comparisons are imperfect because closures in these cases might result from a declining neighborhood or bad economy—factors that would have an independent effect on crime. An alternative approach we are currently pursuing is to assess whether closure effects differ according to the population or retail density around a dispensary. If the increase in crime is due primarily to reduced traffic, then these effects should be larger in less-trafficked areas.

Third, the effect may be tied to the drug trade. Closing dispensaries does not eliminate the demand for marijuana. To the extent that illicit suppliers try to move in to fill the new void, this could generate other crime. Our data cover reported crimes and not arrests, and, since drug crimes are vastly underreported, we cannot observe a change in illicit drug sales in our data. However, this hypothesis may be testable with data on drug arrests or on the source of drug purchases.

Fourth, the effect may be explained by police presence. If police anticipated higher crime connected with marijuana dispensaries, they may have patrolled the areas around dispensaries more intensively, thereby reducing street crime. Once the dispensaries were closed, they may have reduced police presence, and crime may have returned to pre-dispensary levels. In this case, the real causal factor is the effect that dispensaries have on police practices, rather than any effect of the dispensaries per se. One could test this hypothesis by obtaining data about LAPD service allocation and arrest records to see if areas with dispensaries were targeted more intensively.

Fifth, the effect might be explained by some other police-related efforts in connection with the efforts to close the clinics. Perhaps the police stepped up local enforcement efforts in order to encourage dispensaries to close. Once the clinics closed, police went elsewhere and crime surged. To test this hypothesis, one could examine crime data during a larger window around the closing of the clinics. This would allow us to see if the estimated effect persists over a longer period. In ongoing work, we are extending the window around the closures to include several weeks before and after June 7, 2010.

Conclusion

The vast majority of Americans favor legalizing marijuana for medical purposes. Activists have harnessed this support to pass medical marijuana laws in 16 states and the District of Columbia, and more states are likely to follow.

Since the first medical marijuana law was passed by California in 1996, states have focused increasingly on how to regulate the supply side of this market. These efforts respond in part to thriving retail medical marijuana dispensaries in such cities as Los

Figure 2
Geographic Distribution of Medical Marijuana Dispensaries in Venice, California, as of June 7, 2010

Angeles and the presumed crime and quality of life problems they bring with them.

However, state efforts to regulate and, in some cases, institutionalize medical marijuana manufacturing and distribution have met with warnings from DOJ. Many have scaled back their efforts or abandoned their efforts altogether.

This recent turn of events suggests that local approaches to regulating marijuana may proliferate nationwide, as they do in California. Localities will consider whether to ban dispensaries and, if not, whether and how to control their numbers. This project provides some empirical evidence to guide policymakers by presenting a case study of the City of Los Angeles and its effort to control the distribution of medical marijuana.

As part of the case study, we use Los Angeles's experience ordering the close of hundreds of dispensaries to test the commonly held belief that medical marijuana dispensaries increase local crime. Contrary to conventional wisdom, press accounts, and some statements by law enforcement, our analysis suggests that the closing of the medical marijuana dispensaries is associated with an increase—rather than the expected decrease—in local crime in a short-term ten-day period. Overall crime increased almost 60 percent in the blocks surrounding closed clinics in the ten days following their closing. We offer a variety of plausible hypotheses to explain this finding. Further research is necessary to determine whether the effect is truly the result of marijuana dispensaries preventing crime in the local neighborhood. Although the current study cannot offer a definitive answer as to why crime increased around closed dispensaries, it should give jurisdictions reason to question the commonly held view that dispensaries attract and even cause crime in their neighborhoods. ■

Appendix

Table A.1
Pre-Closure Difference in Crime Counts Around Dispensaries Allowed to Remain Open and Ordered to Close

Ln(Crime Type)	Radius Around Dispensary			
	0.3 Miles	0.6 Miles	1.5 Miles	3 Miles
Total crimes	0.004 (0.005) [0.026]	−0.005 (0.011) [0.068]	−0.088 (0.032) [0.371]	−0.017 (0.074) [1.35]
Theft	0.001 (0.004) [0.013]	0.001 (0.008) [0.042]	0.021 (0.017) [0.198]	0.035 (0.032) [0.648]
Breaking and entering	0.004 (0.002) [0.08]	0.0001 (0.003) [0.013]	−0.016 (0.008) [0.065]	−0.005 (0.016) [0.220]
Assault	0.0016 (0.0014) [0.004]	−0.002 (0.003) [0.008]	0.016 (0.009) [0.056]	0.021 (0.018) [0.253]
Observations	6,600	6,600	6,600	6,600

NOTES: Data are from CrimeReports (undated) for May 28, 2010, through June 6, 2010, for areas of the specified distance surrounding dispensaries. Each cell represents a separate regression. The first number in each cell is the mean difference for open dispensaries minus closed dispensaries. The standard error on the difference is in parentheses. The mean crime count for dispensaries allowed to remain open is given in brackets.

Table A.2
Sensitivity Analysis: Log Crime Specification and Average Percentage Increase in Daily Crime Reports Associated with Closures

Ln(Crime Type)	Radius Around Dispensary			
	0.3 Miles	0.6 Miles	1.5 Miles	3 Miles
Total crimes	2.14 (1.12) [−0.075, 4.35]	2.51 (1.46) [−0.36, 5.39]	1.16 (2.64) [−4.03, 6.35]	0.25 (2.97) [−6.09, 5.58]
Theft	0.32 (0.61) [−0.87, 1.51]	0.41 (0.99) [−1.54, 2.36]	0.49 (2.13) [−3.70, 4.68]	−1.12 (2.60) [−6.23, 3.98]
Breaking and entering	1.19 (0.60) [0.01, 2.36]	1.50 (0.82) [−0.11,0.31]	−0.36 (1.56) [−3.42, 2.71]	3.73 (2.29) [−0.78, 8.24]
Assault	0.82 (0.58) [−0.33, 1.96]	1.11 (0.69) [−0.23, 2.45]	−0.29 (1.50) [−3.23, 2.65]	1.83 (2.23) [−2.56, 6.21]
Observations	12,600	12,600	12,600	12,600

NOTES: Data are from CrimeReports (undated) for May 28, 2010, through June 17, 2010, for areas of the specified distance surrounding dispensaries. Each cell represents a separate regression. The first entry in each cell is the coefficient on β from Equation 1 with $\log(crime + 0.1)$ as the dependent variable and represents the change in crimes post-closure. All regressions include date fixed effects and dispensary fixed effects. Standard errors are clustered at the dispensary level and given in parentheses; 95-percent confidence intervals are given in brackets.

Table A.3
Sensitivity Analysis of the Average Increase in Daily Crime Associated with Closures: Restricting to Areas with Both Open and Closed Dispensaries

Crime Type	Radius Around Dispensary			
	0.3 Miles	0.6 Miles	1.5 Miles	3 Miles
Total crimes	0.015 (0.006) [0.0029, 0.028]	0.020 (0.009) [0.003, 0.037]	0.014 (0.019) [–0.024, 0.052]	0.016 (0.030) [–0.044, 0.076]
Theft	0.005 (0.004) [–0.002, 0.011]	0.009 (0.006) [–0.003, 0.021]	0.014 (0.016) [–0.019, 0.046]	–0.016 (0.026) [–0.067, 0.035]
Breaking and entering	0.007 (0.003) [0.0007, 0.013]	0.011 (0.004) [0.003, 0.019]	0.007 (0.008) [–0.009, 0.024]	0.020 (0.013) [–0.0047, 0.045]
Assault	0.004 (0.003) [–0.0012, 0.0089]	0.003 (0.003) [–0.002, 0.009]	0.011 (0.009) [–0.008, 0.029]	0.005 (0.019) [–0.033, 0.042]
Ln(Total crimes)	2.56 (1.15) [0.30, 4.82]	3.06 (1.45) [0.20, 5.91]	3.27 (2.45) [–1.16, 8.61]	1.98 (3.06) [–4.03, 7.99]
Ln(Theft)	0.32 (0.61) [–0.87, 1.52]	0.98 (1.01) [–1.00, 2.96]	1.00 (1.90) [–2.73, 4.73]	–0.86 (2.63) [–6.01, 4.29]
Ln(Breaking and entering)	1.47 (0.63) [0.22, 2.71]	2.29 (0.85) [0.62, 3.96]	0.85 (1.48) [2.05, 3.75]	5.06 (2.16) [0.82, 9.31]
Ln(Assault)	0.92 (0.62) [–0.30, 2.13]	0.84 (0.68) [–0.50, 2.17]	1.11 (1.44) [–1.71, 3.94]	2.35 (2.20) [–1.96, 6.66]
Observations	11,046	11,046	11,046	11,046

NOTES: Sample is restricted to 526 dispensaries located in zip codes that have both dispensaries that were subject to closure and dispensaries that were allowed to remain open. Data are from CrimeReports (undated) for May 28, 2010, through June 17, 2010, for areas of the specified distance surrounding dispensaries. Each cell represents a separate regression. The first entry in each cell is the coefficient on β from Equation 1 and represents the change in crimes post-closure. All regressions include date fixed effects and dispensary fixed effects. Standard errors are clustered at the dispensary level and given in parentheses. Confidence intervals at the 95-percent level for the estimate are provided in brackets.

Table A.4
The Average Increase in Daily Crime Reports Associated with Closures: Coding Known Defiant Dispensaries as Open

Crime Type	Radius Around Dispensary			
	0.3 Miles	0.6 Miles	1.5 Miles	3 Miles
Total crimes	0.014 (0.006) [0.002, 0.025]	0.021 (0.008) [0.005, 0.038]	−0.001 (0.020) [−0.040, 0.038]	0.025 (0.033) [−0.040, 0.090]
Theft	0.006 (0.003) [−0.001, 0.013]	0.010 (0.006) [−0.002, 0.022]	0.016 (0.016) [−0.015, 0.047]	−0.006 (0.026) [−0.056, 0.043]
Breaking and entering	0.005 (0.003) [−0.0003, 0.011]	0.008 (0.004) [0.001, 0.016]	−0.004 (0.009) [−0.021, 0.012]	0.002 (0.013) [−0.023, 0.028]
Assault	0.003 (0.002) [−0.0015, 0.008]	0.008 (0.003) [0.0011, 0.014]	0.001 (0.010) [−0.018, 0.020]	0.004 (0.019) [−0.033, 0.042]
Observations	12,600	12,600	12,600	12,600

NOTES: Data are from CrimeReports (undated) for May 28, 2010, through June 17, 2010, for areas of the specified distance surrounding dispensaries. Each cell represents a separate regression. Four defiant dispensaries were identified from the *Los Angeles Times* report on LAPD raids and another four from an *LA Weekly* report—see Rubin and Hoeffel (2010) and Romero and Wei (2010). The first entry in each cell is the coefficient on β from Equation 1 and represents the change in crimes post-closure. All regressions include date fixed effects and dispensary fixed effects. Standard errors are clustered at the dispensary level and given in parentheses; 95-percent confidence intervals are given in brackets.

Bibliography

Americans for Safe Access, list of local California dispensary regulations, Oakland, Calif., 2011. As of August 3, 2011: http://www.safeaccessnow.org/downloads/Moratoria-Ban-Ordinance.pdf

Arizona Medical Marijuana Act, Initiative Amending Title 36, May 15, 2009. As of August 3, 2011: http://www.azsos.gov/election/2010/general/ballotmeasuretext/I-04-2010.pdf

Associated Press, "N.J. Medical Marijuana Dispensaries Have Strong Ties to Traditional Medicine, Strict Regulations," NJ.com, April 2, 2011a. As of August 3, 2011: http://www.nj.com/news/index.ssf/2011/04/nj_medical_marijuana_dispensar.html

———, "House and Senate OK Marijuana Bill in Initial Votes," *Bozeman Daily Chronicle*, April 26, 2011b. As of August 3, 2011: http://www.bozemandailychronicle.com/news/state_government/article_dc327650-7041-11e0-8778-001cc4c002e0.html

Banks, Sandy, "Some Compassionate Pot Shops Caught in L.A. Law's Red Tape," *Los Angeles Times*, October 19, 2010. As of August 3, 2011: http://articles.latimes.com/2010/oct/19/local/la-me-banks-20101019

Blum, Justin, "Medical Marijuana Policy Eased by Justice Department (Update3)," Bloomberg News, October 19, 2009. As of August 3, 2011: http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aVTHST0TMWeE

Bratton, William J., "Report on Facilities That Distribute Medical Marijuana Within the City of Los Angeles," Los Angeles, Calif., July 27, 2005. As of August 3, 2011: http://clkrep.lacity.org/onlinedocs/2005/05-0872_rpt_lapd_7-27-05.pdf

Brooks, Leah, "Volunteering to Be Taxed: Business Improvement Districts and the Extra-Governmental Provision of Public Safety," *Journal of Public Economics*, Vol. 92, Issues 1–2, February 2008, pp. 388–406.

Brown, Edmund G., *Guidelines for the Security and Non-Diversion of Marijuana Grown for Medical Use*, State of California, Department of Justice, 2008. As of August 3, 2011: http://ag.ca.gov/cms_attachments/press/pdfs/n1601_medicalmarijuanaguidelines.pdf

Burke, Anita, "Dispensaries Will Further Abuse, Police Believe," *Mail Tribune*, October 4, 2010. As of August 3, 2011: http://www.mailtribune.com/apps/pbcs.dll/article?AID=/20101004/NEWS/10040305

Burke, Dennis K., "Re: Arizona Medical Marijuana Program," Phoenix, Az., May 2, 2011. As of August 3, 2011: http://www.azcentral.com/ic/pdf/0502us-attorney-arizona-medical-pot.pdf

California Senate Bill 420, The Medical Marijuana Program Act, October 12, 2003. As of August 3, 2011: http://info.sen.ca.gov/pub/03-04/bill/sen/sb_0401-0450/sb_420_bill_20031012_chaptered.html

Campanile, Carl, "Prosecutor Whacks Weed," *New York Post*, June 17, 2010. As of August 3, 2011: http://www.nypost.com/p/news/local/prosecutor_whacks_weed_pqjmrqhSmybvhcOlYO2prN

Carpenter, Eric, "Judge: Anaheim Can Ban Medical Pot Shops," *The Orange County Register*, August 22, 2011. As of August 24, 2011: http://www.ocregister.com/news/anaheim-313305-law-court.html

Chang, Tom, and Mireille Jacobson, "Going to Pot: The Impact of Medical Marijuana Dispensaries on Crime," unpublished manuscript, 2011.

City and County of San Francisco Planning Department, "Background Information for Potential Operators of Medical Cannabis Dispensaries," San Francisco, Calif., undated. As of August 3, 2011: http://www.sf-planning.org/Modules/ShowDocument.aspx?documentid=525

City Council of the City of West Hollywood, Ordinance No. 07-743, An Ordinance of the City of West Hollywood Approving Zone Text Amendment 2006-010 and Amending Title 19 (Zoning Ordinance) and Title 7 (Health) Regarding Medical Marijuana Dispensaries, February 5, 2007. As of August 3, 2011: http://calpotnews.com/wp-content/uploads/2010/02/07-743.pdf

Cohen, Marsha N., "Breaking the Federal/State Impasse over Medical Marijuana: A Proposal," *Hastings Women's Law Journal*, Vol. 11, No. 1, 2000, pp. 59–74.

The Compassionate Use Act of 1996, California Proposition 215, November 5, 1996. As of August 18, 2011: http://www.cdph.ca.gov/programs/MMP/Pages/CompassionateUseact.aspx

Conant v Walters, 309 F. 3d 629 (9th Cir. 2002), cert. denied, 540 U.S. 946 (2003).

Cook, Philip J., and John MacDonald, "Public Safety Through Private Action: An Economic Assessment of BIDS," *The Economic Journal*, Vol. 121, Issue 552, May 2011, pp. 445–462

Cote, John, "Marijuana Hotspots vs. Starbucks—Who Wins?" City Insider, sfgate.com, November 17, 2008. As of August 3, 2011: http://www.sfgate.com/cgi-bin/blogs/cityinsider/detail?entry_id=32650

Council of the City of Los Angeles, Ordinance 179027, An Interim Control Ordinance Temporarily Prohibiting the Opening of Any New Medical Marijuana Dispensaries, August 10, 2007. As of August 3, 2011: http://clkrep.lacity.org/onlinedocs/2005/05-0872-s1_ord_179027.pdf

———, Ordinance 180749, June 22, 2009. As of August 3, 2011: http://clkrep.lacity.org/onlinedocs/2009/09-0964_ord_180749.pdf

———, Ordinance 181069, February 3, 2010a. As of August 3, 2011: http://clkrep.lacity.org/onlinedocs/2008/08-0923_ord_181069.pdf

———, Amending Regulations Regarding Medical Marijuana Collectives, Council File Number 08-0923-S7, November 24, 2010b. As of August 4, 2011: http://clkrep.lacity.org/onlinedocs/2008/08-0923-S7_ca_11-24-10.pdf

———, Ordinance 181530, January 25, 2011. As of August 4, 2011: http://clkrep.lacity.org/onlinedocs/2008/08-0923-s7_ord_181530.pdf

Council of the District of Columbia, Legalization of Marijuana for Medical Treatment Amendment Act of 2010, 2010. As of August 3, 2011: http://medicalmarijuana.procon.org/sourcefiles/DCMJLawMay2010.pdf

CrimeReports, homepage, undated. As of August 3, 2011: https://www.crimereports.com

Curtius, Mary, and Nona Yates, "Cannabis Buyer's Club Founder Arrested," *Los Angeles Times*, October 12, 1996. As of August 3, 2011: http://articles.latimes.com/1996-10-12/news/mn-53188_1_cannabis-buyers-club/2

Davenport, Paul, "Arizona Medical Marijuana Law: State Sues U.S. Justice Department," *Huffington Post*, May 27, 2011. As of August 3, 2011: http://www.huffingtonpost.com/2011/05/27/arizona-medical-marijuana-law_n_868357.html

Del Barco, Mandalit, "How Many L.A. Pot Clinics Will Survive Crackdown?" *All Things Considered*, National Public Radio, September 28, 2010. As of August 3, 2011: http://www.npr.org/templates/story/story.php?storyId=130186398

Delaware Code, Title 16, Health and Safety, Food and Drugs, Chapter 49A, Delaware Medical Marijuana Act, effective July 1, 2011. As of August 4, 2011: http://delcode.delaware.gov/title16/c049a/index.shtml

Delaware State Senate, 146th General Assembly, Senate Bill No. 17, An Act to Amend Title 16 of the Delaware Code Creating the Delaware Medical Marijuana Act, May 13, 2011. As of August 3, 2011: http://legis.delaware.gov/LIS/lis146.nsf/vwLegislation/SB+17/$file/legis.html

Delgadillo, Rockard J., "Report re: Legal Issues Surrounding Medical Marijuana Dispensaries," Los Angeles, Calif., October 19, 2006. As of August 3, 2011: http://clkrep.lacity.org/onlinedocs/2005/05-0872_rpt_atty_10-19-06.pdf

Doherty, Brian, "L.A.'s Pot Revolution," *Reason*, May 2010. As of August 3, 2011: http://reason.com/archives/2010/04/12/las-pot-revolution

Fields, Gary, and Justin Scheck, "U.S. Mellows on Medical Marijuana," *Wall Street Journal*, October 20, 2009. As of August 3, 2011: http://online.wsj.com/article/SB125595221988793895.html

General Assembly of the State of Colorado, "Colorado Medical Marijuana Code," House Bill 10-1284, June 7, 2010. As of August 3, 2011: http://www.cdphe.state.co.us/hs/medicalmarijuana/1284_enr.pdf

General Assembly of the State of Vermont, No. 65, An Act Relating to Registering Four Nonprofit Organizations to Dispense Marijuana for Symptom Relief, June 2, 2011. As of August 3, 2011: http://www.leg.state.vt.us/docs/2012/Acts/ACT065.pdf

Goldberg, Carey, "Marijuana Club Helps Those in Pain," *New York Times*, February 26, 1996. As of August 3, 2011: http://www.nytimes.com/1996/02/25/us/marijuana-club-helps-those-in-pain.html

Gonzales v Raich, 545 U.S. 1 (2005).

Gorman, Dennis M., Paul W. Speer, Erich W. Labouvie, and A. P. Subaiya, "Risk of Assaultive Violence and Alcohol Availability in New Jersey," *American Journal of Public Health*, Vol. 88, No. 1, 1998, pp. 97–100.

Grinspoon, Lester, and James B. Bakalar, *Marijuana, the Forbidden Medicine*, New Haven, Conn.: Yale University Press, 1993.

Guerrero, Jean, "Marijuana Dispensaries Resist L.A. Crackdown," *Wall Street Journal*, June 19, 2010.

Hall, Megan, "Buzz Kill: Federal Warnings Hit Medical Pot Boom," NPR Weekend Edition Saturday, 2011.

Hallenbeck, Terri, "U.S. Prosecutor Issues Vermont Pot Dispensary Warning," *Burlington Free Press*, May 5, 2011. As of August 4, 2011: http://www.burlingtonfreepress.com/article/20110505/NEWS03/105050302/U-S-prosecutor-issues-Vermont-pot-dispensary-warning

Harris, Gardiner, "Researchers Find Study of Medical Marijuana Discouraged," *New York Times*, January 18, 2010. As of August 3, 2011: http://www.nytimes.com/2010/01/19/health/policy/19marijuana.html

Harrison, David, "The Buying and Selling of Legal Marijuana," *Stateline*, September 9, 2010. As of August 3, 2011: http://www.stateline.org/live/details/story?contentId=511628

Hirschfeld, Peter, "Senate Sidelines Pot Dispensary Bill," *Times Argus*, April 2, 2010.

Hoaken, Peter N. S., and Sherry H. Stewart. "Drugs of Abuse and the Elicitation of Human Aggressive Behavior," *Addictive Behaviors*, Vol. 28, No. 9, 2003, pp. 1533–1554.

Hoeffel, John, "LA's Medical Pot Dispensary Moratorium Led to a Boom Instead," *Los Angeles Times*, June 3, 2009a. As of August 3, 2011: http://articles.latimes.com/2009/jun/03/local/me-medical-marijuana3

———, "California: A Medical Marijuana Success Story: West Hollywood Enforces a Strict Ordinance and Eliminates the Drama That Plagues L.A.," *Los Angeles Times*, November 15, 2009b. As of August 3, 2011: http://articles.latimes.com/2009/nov/16/local/me-weho-marijuana16

———, "Move It, Bud, Pot Outlets Are Told," *Los Angeles Times*, June 7, 2010a. As of August 3, 2011: http://articles.latimes.com/2010/jun/07/local/la-me-pot-shutdown-20100607

———, "Pot Ruling Avoids Key Decision," *Los Angeles Times*, August 19, 2010b.

———, "L.A. Finds Only a Quarter of Registered Pot Dispensaries Eligible to Stay Open," *Los Angeles Times*, August 26, 2010c. As of August 3, 2011: http://articles.latimes.com/2010/aug/26/local/la-me-0826-pot-dispensaries-20100826

———, "L.A. Strictly Interprets Restriction on Pot Dispensaries," *Los Angeles Times*, August 29, 2010d. As of August 4, 2011: http://articles.latimes.com/2010/aug/29/local/la-me-pot-dispensaries-20100829

———, "Judge Issues Injunction Against L.A.'s Medical Marijuana Law," *Los Angeles Times*, December 11, 2010e. As of August 4, 2011: http://articles.latimes.com/2010/dec/11/local/la-me-1211-marijuana-dispensaries-20101211

———, "Judge Refuses to Lift Medical Marijuana Injunction," *Los Angeles Times*, January 8, 2011a. As of August 3, 2011: http://www.latimes.com/news/local/la-me-medical-marijuana-20110108,0,729017.story

———, "L.A. Council Amends Medical Marijuana Ordinance," *Los Angeles Times*, January 22, 2011b. As of August 3, 2011: http://www.latimes.com/news/local/la-me-marijuana-20110122,0,7969981.story

———, "L.A. Officials Release List of 141 Medical Marijuana Dispensaries Ordered to Close Immediately," *Los Angeles Times*, L.A. Now. March 9, 2011c. As of August 3, 2011: http://latimesblogs.latimes.com/lanow/2011/03/the-los-angeles-city-attorneys-office-on-wednesday-released-the-list-of-140-medical-marijuana-dispensaries-that-it-has-war.html

———, "Two Lawsuits Challenge Los Angeles' Lottery Plan for Medical Marijuana Dispensaries," *Los Angeles Times*, April 21, 2011d. As of August 3, 2011: http://www.latimes.com/news/local/la-me-0421-pot-lawsuit-20110421,0,389691.story

Hoffmann, Diane E., and Ellen Weber, "Medical Marijuana and the Law," *New England Journal of Medicine*, Vol. 362, No. 16, 2010, pp. 1452–1457.

Holmes, Sue Major, "New Mexico Medical Marijuana Providers Too Limited by Regulations to Provide for Patients," *Huffington Post*, July 16, 2010. As of August 3, 2011: http://www.huffingtonpost.com/2010/07/16/new-mexico-medical-mariju_n_649543.html

Holton, Dwight C., "Notice to Owners, Operators and Landlords of Oregon Marijuana Dispensaries," U.S. Department of Justice, District of Oregon, June 3, 2011. As of August 3, 2011: http://www.wweek.com/portland/file-178-.pdf

Ingold, John, "Analysis: Denver Pot Shops' Robbery Rate Lower Than Banks'," *Denver Post*, January 27, 2010. As of August 3, 2011: http://www.denverpost.com/ci_14275637#ixzz15T3uaWQw

Johnson, Alex, "DEA to Halt Medical Marijuana Raids," msnbc.com, February 27, 2009. As of August 3, 2011: http://www.msnbc.msn.com/id/29433708/ns/health-health_care/

Johnson, Carrie, "U.S. Eases Stance on Medical Marijuana," *Washington Post*, October 20, 2009. As of August 3, 2011: http://www.washingtonpost.com/wp-dyn/content/article/2009/10/19/AR2009101903638.html

Johnson, Charles S., "Medical Marijuana Dispensaries, Doctor Restrictions Win Montana Legislators' Backing," *The Missoulian*, August 13, 2010. As of August 3, 2011: http://missoulian.com/news/local/article_510f9612-a688-11df-bbe3-001cc4c002e0.html

Johnston, David, and Neil Lewis, "Obama Administration to Stop Raids on Medical Marijuana Dispensers," *New York Times*, March 18, 2009. As of August 3, 2011: http://www.nytimes.com/2009/03/19/us/19holder.html

LACityClerk Connect, "Medical Marijuana Dispensaries," Council File: 05-0872-S1, undated(a). As of August 3, 2011: http://cityclerk.lacity.org/lacityclerkconnect/index.cfm?fa=ccfi.viewrecord&cfnumber=05-0872-S1

———, "Medical Marijuana Ordinance/Ordinance/Amendment," Council File: 08-0923-S7, undated(b). As of August 3, 2011: http://cityclerk.lacity.org/lacityclerkconnect/index.cfm?fa=ccfi.viewrecord&cfnumber=08-0923-S7

Lagmay, June, "Eligibility Under Los Angeles Municipal Code Section 45.19.6 et seq. ('Medical Marijuana Ordinance')," Los Angeles, Calif., August 25, 2010. As of August 3, 2011: http://cityclerk.lacity.org/cps/pdf/preliminaryResults08-25-10.pdf

Lee, Michelle Ye Hee, "Arizona Begins Setting Up a Program for Medical Pot," *The Arizona Republic*, November 16, 2010. As of August 3, 2011: http://www.azcentral.com/arizonarepublic/news/articles/2010/11/16/20101116arizona-medical-marijuana-program.html

Los Angeles County Department of Regional Planning, "Medical Marijuana Dispensaries Ordinance Amendment," 2009. As of August 3, 2011: http://planning.lacounty.gov/mmdoa

Los Angeles Police Department, "Crime Mapping," 2011. As of August 3, 2011: http://www.lapdonline.org/crime_prevention/content_basic_view/42390

Los Angeles Police Department, Narcotics Division, "Medical Marijuana Facilities Within the City of Los Angeles," fact sheet, Los Angeles, Calif., December 14, 2006. As of August 4, 2011: http://clkrep.lacity.org/onlinedocs/2005/05-0872_rpt_lapd_1-18-07.pdf

Maas, David, "Toke '09: Dude, Where's My Medical Marijuana?" *Santa Fe Reporter*, April 21, 2009. As of August 3, 2011: http://www.sfreporter.com/santafe/article-4454-toke-09.html

Maine Department of Health and Human Services, Division of Licensing and Regulatory Services, "Rules Governing the Maine Medical Use of Marijuana Program," 10-144 CMR Chapter 122, August 4, 2010. As of August 3, 2011: http://www.maine.gov/tools/whatsnew/attach.php?id=118624&an=2

Maine State Law and Reference Library, "Maine's Medical Marijuana Law," updated July 27, 2011. As of August 3, 2011: http://www.maine.gov/legis/lawlib/medmarij.html

Malinowski, W. Zachary, "Medical-Marijuana Advocacy Group Sees Loophole for Dispensaries in Justice Department Memo," *Providence Journal*, July 11, 2011. As of August 4, 2011: http://www.projo.com/news/content/MARIJUANA_RI_07-07-11_9TP125T_v25.32d4e.html

Marijuana Policy Project, "State-by-State Medical Marijuana Laws: How to Remove the Threat of Arrest," last updated fall 2008. As of August 3, 2011: http://www.mpp.org/legislation/state-by-state-medical-marijuana-laws.html

McCabe, Michael, "State Raids Marijuana Buyers' Club," *San Francisco Chronicle*, August 5, 1996.

McDonald, Patrick Range, and Christine Pelisek, "L.A.'s Medical-Weed Wars," *LA Weekly*, November 23, 2009. As of August 3, 2011: http://www.laweekly.com/2009-11-26/news/l-a-39-s-medical-weed-wars/

Meyer, Josh, "A Federal About-Face on Medical Marijuana," *Los Angeles Times*, October 20, 2009. As of August 3, 2011: http://articles.latimes.com/2009/oct/20/nation/na-medical-marijuana20

Mikos, Robert A., "On the Limits of Supremacy: Medical Marijuana and the States' Overlooked Power to Legalize Federal Crime," *Vanderbilt Law Review*, Vol. 62, No. 5, 2009, pp. 1421–1482.

Miron, Jeffrey A., "Violence and the U.S. Prohibitions of Drugs and Alcohol," *American Law and Economics Review*, Vol. 1, No. 1, 1999, p. 78.

Myerscough, Rodney, and Stuart P. Taylor, "The Effects of Marijuana on Human Physical Aggression," *Journal of Personality and Social Psychology*, Vol. 49, No. 6, 1985, pp. 1541–1546.

National Conference of State Legislatures, "State Medical Marijuana Laws," 2010. As of August 3, 2011: http://www.ncsl.org/default.aspx?tabid=19587

National Public Radio, "In California, Marijuana Dispensaries Outnumber Starbucks," *Tell Me More*, October 15, 2009. As of August 3, 2011: http://www.npr.org/templates/story/story.php?storyId=113822156

New Jersey Register, *Medical Marijuana Program Rules*, Vol. 42, No. 22, 42 N.J.R. 2668(a), November 15, 2010. As of August 3, 2011: http://www.nj.gov/health/draft_mm.pdf

New Mexico Department of Health, "Medical Cannabis Program," undated. As of August 3, 2011: http://www.health.state.nm.us/IDB/medical_cannabis.shtml

New York v United States, 505 U.S. 144 (1992).

"November 2, 2010, General Election Abstracts of Votes, State Measure No. 74," Oregon, undated. As of August 4, 2011: http://www.sos.state.or.us/elections/doc/history/nov22010/results/m74.pdf

O'Connell, Sue, "Emerging Issue: Medical Marijuana Dispensary States vs. Caregiver States," CFHHS Subcommittee on Medical Marijuana, August 2010. As of August 3, 2011: http://leg.mt.gov/content/Committees/Interim/2009_2010/Children_Family/Emerging-Issue/dispensary-caregiver-states-aug12.pdf

Oregon Ballot Measure 74, The Oregon Regulated Medical Marijuana Supply System, 2010. As of August 4, 2011: http://www.sos.state.or.us/elections/irr/2010/028text.pdf

Osher, Christopher N., "As Dispensaries Pop Up, Denver May Be Pot Capital, U.S.A.," *Denver Post*, January 3, 2010. As of August 3, 2011: http://www.denverpost.com/ci_14112792

Pacula, Rosalie Liccardo, Jamie F. Chriqui, Deborah A. Reichmann, and Yvonne M. Terry-McElrath, "State Medical Marijuana Laws: Understanding the Laws and Their Limitations," *Journal of Public Health Policy*, Vol. 23, No. 4, 2002, pp. 413–439.

Pacula, Rosalie Liccardo, and Beau Kilmer, *Marijuana and Crime: Is There a Connection Beyond Prohibition?* NBER Working Paper No. 10046, Cambridge, Mass.: National Bureau of Economic Research, 2003.

People v Urziceanu, 132 Cal. App. 4th 747, 33 Cal. Rptr. 3d 859, September 12, 2005. As of August 3, 2011: http://caselaw.lp.findlaw.com/data2/californiastatecases/C045276.PDF

Perez-Pena, Richard, "New Jersey's Medical Marijuana Law Loses Planned Grower and Dispensers," *New York Times*, July 23, 2010. As of August 3, 2011: http://www.nytimes.com/2010/07/24/nyregion/24marijuana.html

Pew Research Center, "Modest Rise in Percentage Favoring General Legalization: Broad Public Support for Legalizing Medical Marijuana," research report, April 2010. As of August 3, 2011: http://people-press.org/reports/pdf/602.pdf

Philips, Matthew, "The Wild West of Weed: How Los Angeles Became Overrun with Pot Shops, and How It's All About to End." *Newsweek*, October 15, 2009. As of August 3, 2011: http://www.newsweek.com/2009/10/14/the-wild-west-of-weed.html

Printz v United States, 521 U.S. 898 (1997).

ProCon.org, "16 Legal Medical Marijuana States and DC: Laws, Fees, and Possession Limits," last updated May 13, 2011a. As of August 3, 2011: http://medicalmarijuana.procon.org/view.resource.php?resourceID=000881

———, "16 Legal Medical Marijuana States and DC: Laws, Fees, and Possession Limits—DC," last updated May 13, 2011b. As of August 3, 2011: http://medicalmarijuana.procon.org/view.resource.php?resourceID=000881#DC

Reason, U.S. attorney letters, 2011. As of August 3, 2011: http://reason.com/assets/db/13050456443878.pdf

Reiman, Amanda, *Medical Cannabis Facilities*, Saarbucken, Germany: VDM Verlag, 2010.

Resignato, A. J., "Violent Crime: A Function of Drug Use or Drug Enforcement?" *Applied Economics*, Vol. 32, No. 6, 2000, p. 681.

Reuteman, Michael, "Medical Marijuana Business Is on Fire," *USA Today*, April 20, 2010. As of August 3, 2011: http://www.usatoday.com/money/industries/health/2010-04-20-medical-marijuana_N.htm

Rhode Island General Assembly, Chapter 016, 2009—H 5359 Substitute A, An Act Relating to Food and Drugs—The Edward O. Hawkins and Thomas C. Slater Medical Marijuana Act, June 16, 2009. As of August 3, 2011: http://www.rilin.state.ri.us/PublicLaws/law09/law09016.htm

Richardson, John, "Pot Law Draws Federal Caution," *Portland Press Herald*, May 19, 2011. As of August 17, 2011: http://www.pressherald.com/news/pot-law-draws-federal-caution_2011-05-19.html

Rodgers, Jakob, "Marijuana Shops Not Magnets for Crime, Police Say," *The Gazette* (Colorado Springs), September 14, 2010. As of August 3, 2011: http://www.gazette.com/articles/wall-104598-marijuana-brassfield.html

Romero, Dennis, "Many L.A. Pot Shops Warned to Close or Face Jail, Fines," *LA Weekly*, May 4, 2010a. As of August 3, 2011: http://blogs.laweekly.com/informer/2010/05/pot_shops_warned_to_close.php

———, "New L.A. City Rule Would Allow 180 Pot Shops to Stay Open," *LA Weekly*, November 10, 2010b. As of August 3, 2011: http://blogs.laweekly.com/informer/2010/11/marijuana_dispensaries_angeles.php

———, "L.A. City's Attempts to Regulate Pot Shops Drags on for Years as Residents Complain About Related Crime," *LA Weekly*, November 16, 2010c. As of August 3, 2011: http://blogs.laweekly.com/informer/2010/11/marijuana_dispensary_crime.php

Romero, Dennis, and Clarissa Wei, "Most of L.A.'s Outlaw Medical Marijuana Dispensaries Have Closed," *LA Weekly*, August 13, 2010. As of August 3, 2011: http://blogs.laweekly.com/informer/2010/08/la_pot_shops_closing.php

Rubin, Joel, and John Hoeffel, "Clearing Away the Pot Stores, One Raid at a Time," *Los Angeles Times*, July 5, 2010. As of August 3, 2011: http://www.latimes.com/news/local/la-me-pot-bust-20100705,0,3679053.story

Salkin, Patricia E., and Zachary Kansler, "Medical Marijuana Meets Zoning: Can You Grow, Sell, and Smoke That Here?" *Planning & Environmental Law*, Vol. 62, No. 8, 2010, pp. 3–8.

Samuels, David, "Dr. Kush: How Medical Marijuana Is Transforming the Pot Industry," *The New Yorker*, July 28, 2008. As of August 3, 2011: http://www.newyorker.com/reporting/2008/07/28/080728fa_fact_samuels

Scribner, Richard A., Deborah Cohen, Stephen Kaplan, and S. H. Allen, "Alcohol Availability and Homicide in New Orleans: Conceptual Considerations for Small Area Analysis of the Effect of Alcohol Outlet Density," *Journal of Studies on Alcohol*, Vol. 60, 1999, pp. 310–316.

Scribner, Richard A., David P. MacKinnon, and James H. Dwyer, "The Risk of Assaultive Violence and Alcohol Availability in Los Angeles County," *American Journal of Public Health*, Vol. 85, No. 3, 1995, pp. 335–340.

Smith, Dylan, "Medical Marijuana Back on AZ Ballot," *Tucson Sentinel*, June 2, 2010. As of August 3, 2011: http://www.tucsonsentinel.com/local/report/060210_medical_marijuana

Southall, Ashley, "Washington, D.C., Approves Medical Use of Marijuana," *New York Times*, May 4, 2010. As of August 3, 2011: http://www.nytimes.com/2010/05/05/us/05marijuana.html

Teh, Bing-Ru, "Do Liquor Stores Increase Crime and Urban Decay? Evidence from Los Angeles," unpublished manuscript, 2008.

U.S. Congress, House of Representatives, Committee on Interstate and Foreign Commerce, Subcommittee on Public Health and Welfare, *Hearings on H.R. 11701, H.R. 13743 and Related Bills*, 91st Congress, 2nd Session, Washington, D.C.: GPO, 310-847, 1970.

United States Department of Justice, "Memorandum for Selected United State Attorneys on Investigations and Prosecutions in States Authorizing the Medical Use of Marijuana," The Justice Blog, October 19, 2009. As of August 3, 2011: http://blogs.usdoj.gov/blog/archives/192

Washington State Department of Health, "Frequently Asked Questions About Medical Marijuana in Washington State," last updated July 20, 2011. As of August 3, 2011: http://www.doh.wa.gov/hsqa/medical-marijuana/FAQmore.htm#Dispensary

Watson, Stanley J., John A. Benson, and Janet E. Joy, "Marijuana and Medicine: Assessing the Science Base: A Summary of the 1999 Institute of Medicine Report," *Archives of General Psychiatry*, Vol. 57, No. 6, 2000, pp. 547–552.

Wei, Clarissa, and Dennis Romero, "L.A. Medical Marijuana Outlets Defy City," *LA Weekly*, June 17, 2010. As of August 3, 2011: http://www.laweekly.com/2010-06-17/news/l-a-medical-marijuana-outlets-defy-city/

Whited, Jason, "Pot-Trepreneurs: High on a Recent Federal Decision to Not Prosecute Medical Marijuana Cases, Nevada Pot Activists Eye California-Style Dispensaries," *Las Vegas City Life*, November 5, 2009. As of August 4, 2011: http://www.lasvegascitylife.com/articles/2009/11/05/news/local_news/iq_32207390.txt

Wholsen, Marcus, "N. Calif. Cities Bring Pot Growing into the Light," Associated Press, *Denver Post*, November 22, 2010. As of August 3, 2011: http://www.denverpost.com/news/marijuana/ci_16675655

Winton, Richard, "Sheriff Says Pot Dispensaries Have Become Crime Targets," *Los Angeles Times*, September 2, 2010. As of August 18, 2011: http://articles.latimes.com/2010/sep/02/local/la-me-0902-baca-pot-20100902

Wyatt, Kristen, "Colo. Governor Signs Changes to Sweeping Pot Rules," Associated Press, 2011.

About This Report

This report presents an overview of the medical marijuana landscape nationwide along with preliminary findings on the relationship between closing medical marijuana dispensaries and local crime. The empirical analysis represents a portion of ongoing work by Mireille Jacobson and Tom Chang to more thoroughly understand the relationship between medical marijuana dispensaries and crime. It is also related to a larger project by the authors to understand the relationship between land-use law, the built environment, crime, and public health, funded by the Robert Wood Johnson Foundation's Public Health Law Research program. The report should be of particular interest to agencies and policymakers who are charged with regulating medical marijuana and to those who are interested in the relationship between medical marijuana and crime.

The RAND Safety and Justice Program

This research was conducted in the Safety and Justice Program within RAND Infrastructure, Safety, and Environment (ISE). The mission of RAND Infrastructure, Safety, and Environment is to improve the development, operation, use, and protection of society's essential physical assets and natural resources and to enhance the related social assets of safety and security of individuals in transit and in their workplaces and communities. Safety and Justice Program research addresses all aspects of public safety and the criminal justice system—including violence, policing, corrections, courts and criminal law, substance abuse, occupational safety, and public integrity.

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TR-987-RWJ (2011)

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